MCA CONNECT

A Whitepaper: Benefits of a Lean Transformation

The Benefits of Lean Transformation

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Introduction

The most succinct definition of lean comes from its founder at Toyota, Taiichi Ohno.

> "ALL WE ARE DOING IS LOOKING AT THE TIME LINE FROM THE MOMENT THE CUSTOMER GIVES US AN ORDER TO THE POINT WHEN WE COLLECT THE CASH. AND WE ARE REDUCING THAT TIME LINE BY REMOVING THE NON-VALUE-ADDED WASTES."

Lean manufacturing is a proven method to reduce lead time and eliminate wastes wherever possible. This in fact is a never-ending journey of continuous improvement as an organization responds to its customers with new products, opens new channels and markets, and introduces new technologies in both its products and processes.

Waste is classified into major categories including excess inventory, overproduction, transport, excess processing, motion, waiting, and correction. Eliminating wastes will reduce lead time, increase quality, reduce inventory, and increase productivity and therefore profit.

This white paper outlines the bottom line impact that you should expect from a lean transformation and addresses concerns raised about realizing these benefits and sustaining the gains.

Bottom Line Results

While individual reports of benefits from lean transformation abound and are well documented, it's helpful to understand more broadly what a company may expect. Individual situations differ and results will vary but here are some general results.

Womack and Byrne

Art Byrne and Jim Womack in the "The Lean Turnaround" find the following to be typical.

- Lead times cut from weeks to days.
- Inventory turns doubled in two years and quadrupled in four.
- Annual productivity gains of 15-20%.
- 50% reduction in defects per year.

- 50% reduction in floor space in two years.
- 4-8% percent improvement in gross margins.
- Working capital as a percentage of sales cut in half.
- Increased growth by taking market share.
- The creation of a team culture in which every person can learn and create personal wealth.

"These are certainly not the end points of what you should expect, but they are pretty typical of what other companies that have implemented Lean in a serious way have achieved. In other words, at a minimum, you should plan to achieve these targets."

> Womack, James P.; Byrne, Art. "The Lean Turnaround: How Business Leaders Use Lean Principles to Create Value and Transform Their Company". McGraw-Hill, 2012.

Manufacturing Advisory Service, UK

Average results from lean transformation in companies in many differing industries and of different sizes over a period of several years.

- On-time Delivery increase 26%
- Stock Turns increase 33%
- Productivity increase 25%
- Scrap decrease 26%
- Space decrease 33%

These are average figures from thousands of project, not just a select few. These figures are typical of what other academic and consultancy studies have published. Taken from Manufacturing Advisory Service in UK performing business improvement projects in thousands of manufacturing companies across the UK for the last several years.

> www.leanmanufacturingtools.org - Benefits of Lean Manufacturing

Maskell and Katko

Brian Maskell and Nick Katko in their leading work with lean accounting find an annual increase in productivity of 20% to be achievable.

"The goal of 20% annual productivity improvements, company-wide, is necessary in order to achieve financial success with Lean. Your company will never get there if the entire burden for productivity improvements is on manufacturing operations. If your company ignores improving the productivity of office processes, the only way to achieve the 20% corporate goal would be for manufacturing's productivity to be much greater than 20%, which is virtually impossible to do."

Katko, Nicholas S. "The Lean CFO: Architect of the Lean Management System". Productivity Press, 2013. Page 2

Benefits with High Mix / Low Volume Manufacturers

Individual company results can be readily found in many lean books, published journal articles, and from many of the leading lean organizations including the Lean Enterprise Institute, AME, and SME. High mix / low volume manufacturers are very diverse and have very unique situations. Following are some results from personal experience. Since each situation is unique, the goals of each initiative must be tailored to address the "pain points" of the organization.

Metals Manufacturer

Situation: Over 1400 end products entirely make to order. Over 13 week lead time with on-time delivery 85%. Many flow paths through the value stream. Under financial pressure due to leveraged buy-out.

Goals:

- Reduce lead time to gain competitiveness
- Increase responsiveness to customer
- Minimize cost and inventories
- Manage manufacturing complexity

Results:

- On-time delivery increased 12% to 97%
- Lead time reduced 72 days to 7 days
- Inventory reduced 67%
- Increased cash flow
- Increased market share to be leader in industry segment

Industrial Equipment Manufacturer

Situation: Over 4000 products with 15 value streams. On average 80 to 100 processes per value stream. 600 employees in a 100 year old family owned business.

Goals:

- Reduce Lead time
- Understand capacity
- Train workforce to be flexible
- Organize by value stream
- Create a sustainable Lean culture

Results:

- Lead Time reduced 14 days to 7 days
- Inventory reduced 50%
- Cross trained workforce
- Introduced lean accounting for value stream profitability
- Increased cash flow
- Reorganized management structure from functional silos to value streams

Specialty Strip Steel

Situation: Over 400 products across 40 monument processes. Trying to get lean for over 5 years. Used SAP for ERP. Under 2 inventory turns and didn't know how to reduce inventory.

Goals:

- Decrease inventory
- Understand capacity
- Factor capacity into scheduling

Results:

- Inventory reduced 42% in 60 days
- Balanced WIP inventory to demand
- Increased cash flow

Chemical Company

Situation: Process industry, 40 different products with large batches and long production runs. Too much of the wrong inventory. Forced to stop production due to lack of finished goods storage. At the same time, extended lead times and put customers on allocation.

Goals:

- Right-size batch sizes
- Reduce inventories
- Increase customer responsiveness
- Institute a formal scheduling discipline

Results:

- Lead time reduced 42 days to 7 days
- Inventory reduced 50%
- Increased manufacturing flexibility
- Increased cash flow

Electronic manufacturing company

Situation: 100% make to order of highly engineered products. Many engineering changes, many new product introductions. Multiple parallel SMT and manual assembly lines.

Goals

- Understand capacity
- Balance work across multiple production lines
- Train workforce
- Set playbooks to manage volume and mix variation
- Reduce overtime

Results

- Lead time reduced 14 days to 7 days
- Overtime reduced 85%
- Increased manufacturing flexibility due to understanding capacity
- Introduced standard work
- Increased cash flow

Benefits beyond the Bottom Line

While any business initiative must be justified on the basis of financial investment and return, a lean transformation brings additional benefits to the organization. Follow are some areas in which lean transformation benefits an organization. Lean should be a growth strategy and not just a cost containment initiative.

Improved Employee Engagement

As lean transformation engages every worker at his or her workplace, the level of employee engagement increases dramatically. As managers learn that the people working in the process know the process best, they find that in almost every instance the workers already know what the problems are. Engaging them in creative solutions builds a sense of teamwork and value for individual contributions. Unleashing the creative solutions of the entire workforce will certainly allow for faster enterprise-wide change than by applying only the limited time and skills of specialists, management, or worst – outside consultants. Lean workplaces are more pleasant when the challenges are clear and people can focus on solving problems and see results rather than affixing blame.

Increased Market Share

High quality products delivered consistently on time enhance the reputation of an organization in their competitive arena. Reducing lead time below the competition can become a potent differentiator. Productivity gains allow products to be offered at lower prices without eroding profitability targets. Each works over the long term to increase market share. Top-line growth should be the goal of a lean strategy.

Freeing Time for Offense

“How will achieving Operational Excellence in the operational side of the business affect business growth? Here’s the link: if the employees who build the product can also adjust and fix the flow before it breaks down, and do all this with little or no management, then what will the managers be doing, since they are not chasing parts, people, and suppliers; managing resources; and so on? In a world of Operational Excellence, managers will be busy with what’s probably the first line on their job description: growing the business. The concept is simple: we cannot grow the business unless we have time to grow the business…

Each employee should be spending time on offense, rather than spending time on maintenance and defense. Think about how your employees spend their time. Think about how much management intervention is needed to get an existing order or product to a customer each day. Think about what you could do with this time if it were dedicated to offense, or business growth."

> Duggan, Kevin J. "Design for Operational Excellence: A Breakthrough Strategy for Business Growth" (p. 43ff). McGraw-Hill, 2011.

Benefits to Customers as a Lean Supplier

A lean transformation has obvious benefits to the company successfully transitioning to lean. Another perspective is to consider how a lean transformation benefits customers of a lean organization. Here are some of the benefits:

- High quality products
- Consistent on-time delivery
- Reduced safety stock needed to buffer for missed deliveries
- Competitive pricing (possibly lower pricing than other suppliers)
- Reduced lead time
- Coordinated delivery schedules with actual demand requirements
- Reduced minimum order quantities
- Greater responsiveness to customer requirements
- Reduced inventory using pull signals to lean supplier
- Broader cooperation in planning and reserving supplier capacity

Are These Benefits Real?

A study entitled "Manufacturers are Failing to Garner Long-Term Productivity Benefits, Despite Retrenchment Efforts Amid Weak Economy" published in 2011 by AlixPartners, a global business advisory firm raised questions about the claims of lean benefits. The study found:

- 70% of manufacturing executives reported that their improvement efforts led to reduction in manufacturing costs of less than 5%.

- 36% indicated that savings were 3-4% and 18% said that savings were under 2%.
- 14% said they didn't even know how much they were saving.
- 60% of respondents believe that half of the savings will be unsustainable.
- Only 13% said they could sustain more than 75% of the identified savings.

According to Steve Maurer of AlixPartners: "Most continuous improvement initiatives focus too much on implementing a particular "checklist" of program tools and processes rather than on basic execution. Many traditional Lean and Six Sigma programs also fail to institutionalize the improvements that they do generate. As a result, the cost benefits often aren't sustainable."

Clearly, there's a divide between those companies who achieve results and those who don't.

Achieving and Sustaining the Gains

What separates the companies who achieve substantial bottom line results from those that do not? Here are some guidelines.

Engaged Leadership

Lean isn't something that's implemented by consultants or by middle managers. It needs to be led from the top. For an excellent discussion of this, see "The Lean Turnaround" by Art Byrne. Art has implemented lean in 30+ businesses as a CEO or Board Chairman. Businesses he led grew by acquisition using the cash generated from one lean transformation for the next acquisition. On his first day with a new company, he introduces lean in an all-hands meeting in the morning and then personally leads the first kaizen event starting that afternoon. Leaders who are actively observing and asking questions will be in touch with where waste remains and where benefits can be unlocked.

Understand What Impacts the Bottom Line

Bottom line results will inevitably improve when you:

- Identify the metric that needs to be improved
- Understand what behaviors impact the metric ("what moves the metric")
- Change those behaviors

In every lean transformation, the opportunities for improvement and waste elimination exceed the time and resources of the organization to address them all at once. Priority should be given to those with the largest return at the lowest cost (the low-hanging fruit).

Keep a Value Stream Perspective

Not all improvement activities will flow to the bottom line. For example, a setup reduction on a machine that is not a constraint may reduce a few hours of labor but won't impact the total performance of the value stream. Conversely a setup reduction on machine that is capacity constrained may have a huge impact to increase throughput and reduce the amount of inventory in the value stream.

Operational performance is the result of many functions working together. A key lean concept is that of a value stream, a family of similar products that are produced. Rather than taking a more vertical, functional view, value streams force a cross-functional understanding of the complete process of creating value from procurement through to customer delivery. Improvements that consider only a single point solution may optimize one process but negatively impact other processes, potentially reducing the total performance of the value stream as a whole.

A quantitative model of value stream operations that supports what-if scenarios provides a tool to compare alternatives in order to focus on improvements with bottom-line impact and to ensure that point solutions proposed in one process don't have unintended consequences upstream or downstream.

Aligning Priorities through Strategy Deployment

Most organizations are awash in metrics and frequently launch initiatives towards improvements, sometimes at cross-purposes. Strategy Deployment, also known as Hoshin Kanri or Policy Deployment, allows an organization to align its metrics and priorities. As Art Byrne rather facetiously puts it, the real benefit of Strategy Deployment is to stop a lot of projects from even getting started. This allows the organization to maintain focus and alignment at all levels.

Standardizing and Institutionalizing

As improvements are identified, it is imperative that standard work is created and visual management instituted that can quickly demonstrate that the revised process is performing

as it should. All workers in the process need to be trained to use standard work. Visual method sheets, value stream maps, and other graphics should be easy to understand, easy to use and easy to update.

A word about software. ERP solutions imbed industry best practices and can be a great resource to help enforce standardization and standard practices. They can also be "anti-lean" and reinforce the wrong behavior. Wherever possible, ERP should be adapted to support your lean value streams, lean flow, and lean implementation. Modern ERP systems are flexible and configurable with many alternatives to support a business process. Even without customization, there are many implementation choices that can be made to allow your ERP to support your lean initiative rather than to be an obstacle. Find experts who understand both lean and ERP and let them help.

About ManufacturingCONNECT for Lean

ManufacturingCONNECT for Lean is a lean planning tool-set from MCA Connect that assists high mix, low volume manufacturers design future state value streams to help drive efficiency. Using your existing ERP data, ManufacturingCONNECT for Lean creates a complete model of your future state lean operation to provide you with quantifiable data supported by what-if analysis that allows you to make valuable, data-driven decisions that improve lead time, reduce waste, and deliver greater profits back to your business.

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ABOUT MCA CONNECT

MCA Connect has been an award-winning Microsoft Gold partner for more than a decade. A key differentiator in working with MCA Connect to implement business solutions is our tight industry focus, but wide set of service offerings. Our deep knowledge of both the product and your industry enables us to find hidden opportunities only made possible through things like proprietary extensions and industry accelerators to fast track your results.