Lean, Six Sigma, and ERP: Putting it all together for Improved Performance

Paper Summary

Many manufacturers perceive Lean, Six Sigma, and ERP as contrasting approaches. They often see them as “mutually exclusive” with competing goals and objectives. The paper looks at the characteristics of all three approaches, along with supporting tools. Also showcased are the differences and similarities of each. The paper concludes with actionable techniques to combine Lean, Six Sigma and ERP for an effective journey of continuous improvement that leads to improved business performance.
To compete and thrive in today’s economy, leading manufacturers focus on continuously improving business processes, eliminating waste and reducing costs.

Through the decades, we’ve seen companies implement various approaches to support these important efforts, including Lean, Six Sigma, and ERP.

Selecting the best approach is not an “either/or” proposition, however. We have found that when companies put Lean, Six Sigma, and ERP together, they make improvement progress more quickly and efficiently.

Looking at Lean

Lean—aimed at eliminating waste—is all about producing more at less cost. Lean manufacturing transforms the way a company produces and delivers products to its customers.

Lean techniques are proven to deliver dramatic results to a range of sectors including manufacturing, health care, consumer goods, and industrial equipment among others.

Despite the proliferation of Lean, there is still a large performance gap between those companies that are simply using Lean techniques versus those that have built a culture based on Lean thinking.

“LEAN CALLS INTO PLAY TOOLS THAT ASSIST IN THE IDENTIFICATION AND STEADY ELIMINATION OF WASTE.”

CHARACTERISTICS OF LEAN

Researchers have found that those companies with optimized Lean operations share three key characteristics:

• A commitment to the fundamentals such as streamlining processes, creating a well-ordered work environment, and ongoing continuous improvement programs.

• Use of Lean-enabling technology to manage the speed, volume, and complexity of business transactions. The IT environment must streamline communication and information exchange across departments, supply chains, time zones and the entire enterprise.
• A shared understanding of Lean throughout all levels of the enterprise – from shop floor personnel to the executive suite.

With Lean, the expenditure of resources for any goal other than the creation of value for the end-customer is wasteful and a target for elimination.

LEAN TOOLS

Lean calls into play tools that assist in the identification and steady elimination of waste. Lean tools are used in Kaizen events to organize a team’s efforts to improve processes. Examples of Lean tools include:

• Value-stream mapping - used to document, analyze and improve the flow of information or materials required to produce a product or service for a customer.

• Five S—focuses on having visual order, organization, with a clean and standardized workplace

• Kanban – a Japanese term meaning “signal” used in Just in Time (JIT) manufacturing. It signals a cycle of replenishment for production and materials.

• Flow – refers to how processes move from the start to the end.

Looking at Six Sigma

Six Sigma is a business management strategy originally developed by Motorola. The methodology is aimed at improving quality by reducing variability and improving processes.

Today Six Sigma enjoys widespread application in many sectors of industry.

The term “Six Sigma” comes from a field of statistics known as process-capability studies and refers to the ability of manufacturing processes to produce a very high proportion of output within specification.

“SIX SIGMA TECHNIQUES HELP MANUFACTURERS DELIVER TO THEIR CUSTOMERS CONSISTENT AND PREDICTABLE AND/OR PRODUCTS WITH NEAR ZERO DEFECTS.”

GOALS OF SIX SIGMA

Six Sigma’s implicit goal is to improve all processes to a consistently high level of quality.

Ultimately, Six Sigma is about being customer-centric. To enhance customer satisfaction, manufacturers want to deliver consistent and predictable services and/or products with near zero defects.
Six Sigma seeks to improve the quality of process outputs by identifying and removing the causes of defects (errors) and variability in manufacturing and business processes.

The approach uses a set of quality-management methods, including statistical methods, and creates a special infrastructure of people within the organization (“Black Belts,” “Green Belts,” etc.) who become experts in these methods.

Looking at ERP

The term Enterprise Resource Planning (ERP) was originally derived from the term Manufacturing Resource Planning (MRP), used to describe a collection of software applications. These early MRP systems were first developed with available technology in the 1970s.

ERP systems have evolved as technology has changed. ERP systems typically handle manufacturing, supply chain, logistics, sales, customer service, distribution, inventory, quality, shipping, invoicing and accounting.

When implementing an ERP system, organizations will modify their business processes to use the “best practice” function delivered in the “out-of-the-box” version of the software.

A DELICATE BALANCE

For many small to midsize manufacturers, it is a delicate balancing act to implement Lean corporate-wide and on the plant floor.

The conflict comes between Lean and Six Sigma advocates who often argue that short-term process improvements are a better investment than new technology (ERP).

On the other hand, ERP software vendors market their products as “Lean” compliant. They position their systems as providing best practices that when implemented, deliver significant productivity improvements.

DIFFERING PERCEPTIONS

Today, management typically treats these initiatives separately, not recognizing the potential of combining the three to successfully deliver even more significant business improvement.

To these organizations, there are seemingly conflicting differences in the three approaches which include:

- The time factor: An ERP project has a long lead-time in terms of generating improvements, compared to Lean and Six Sigma, which can produce quick, short-term improvements.
- Heavy investment: ERP systems require a significant investment, but promise significant returns.
• Variable outcomes: Many Lean and/or Six Sigma companies discover that sooner or later Lean and Six Sigma progress will slow as they encounter weakness in the company’s ERP capability to move dynamically with the improvements that they strive to deliver. In other words, the legacy ERP technology tools eventually become a roadblock to improvement.

SIMILAR APPROACHES

It’s important to note the similarities in the approaches of Lean, Six Sigma and ERP. Those companies leveraging the similarities of the three approaches achieve dividends in both the short and long term.

Those similarities include:

• Shared objectives: All three approaches ultimately have the same objective – to improve business performance. All analyze current processes, and design new processes.

• Shared commitment: All three approaches demand the company’s “best and brightest” share a commitment of executive support and sponsorship.

• Shared focus: All three approaches keep a focus on quality, customer satisfaction and reduced variation.

“COMBINING LEAN, SIX SIGMA AND ERP LETS MANUFACTURERS ACHIEVE BUSINESS IMPROVEMENT MORE EFFECTIVELY.”

Drawing it All Together

Given the shared objectives, commitment and focus, how can a company get all three approaches to work together?

We encourage our clients to start on a journey of continuous improvement that includes Lean, Six Sigma, and ERP.

In that context, Lean, Six Sigma, and ERP become tools to be employed on this journey of continuous improvement.

Through our work with various companies, the following tips are effective techniques to draw it all together:

• Design your journey of continuous improvement to include all three methods.

• Employ one set of resources – a company core team for continuous improvement across each approach.

• Use Lean for value-stream mapping and identifying value.

• Use Six Sigma for measuring processes and designing new processes.
• Become educated on ERP capabilities, especially those that facilitate Lean like demand leveling and JIT inventory, to enable your future improvements.

• Map ERP into your journey of continuous improvement when the current technology becomes a roadblock to improvement.

• Implement Lean technology solutions that provide a solid foundation to manage Lean transactions across core value streams that extend from the customer, through production, and back to the supplier.

When Lean, Six Sigma and ERP are in sync, the journey of continuous improvement will be a journey that never ends.

It will include business-improvement projects using Lean and Six Sigma tools, while at the same time enabling the transformation to improved ERP systems.

About Ultra Consultants, Inc.

Ultra Consultants is an independent consulting firm serving the manufacturing and distribution industries. Organizations turn to the Ultra team for ROI-driven ERP technology expertise and business process management that improves revenue and customer satisfaction, enhances financial management and real-time decision making, improves productivity and reduces time to market. The world’s middle market companies make up the Ultra Consulting client roster including aerospace and defense; automotive; chemical; consumer goods; electronics; food and beverage; industrial equipment; medical device; metal fabrication and plastics manufacturers. Ultra Consultants offer deep experience in manufacturing process optimization. The team averages over 20 years manufacturing and process experience with professional certifications in APICS, Lean manufacturing, Six Sigma Green and Black Belt, and Project Management.

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