Process Improvement, Human Resources and Lean Six Sigma

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Abstract

This paper examines the Lean Six Sigma methodology and how to apply it in a Human Resources environment. An in depth look is given into the DMAIC process. This paper also discusses strategies for implementing Lean Six Sigma in mid-large sized organizations and HR’s role in implementation. Not only does it focus on how Human Resources can contribute to process improvement projects, but it also focuses on how to improve Human Resources processes through statistics driven change.
Introduction

In a recessional economy, mid to large sized businesses will look for ways to cut costs in order to remain profitable. One of the first things a business will look at cutting is headcount. However, there are other ways to reduce costs in organizations, while improving the efficiency of workers. Many businesses in recent years, including this author’s employer, Shaw Industries Group, Inc., have turned to Lean Six Sigma methodology in order to streamline processes and cut waste within organizations. Traditionally, Lean Six Sigma was applied only in the operations side of businesses, where manufacturing typically occurred. More and more, businesses are learning that Lean Six Sigma can be applied to transactional and service related processes successfully, maximizing the benefits of their investment.

Discussion

What is Lean Six Sigma?

In the 1980s, Motorola developed a methodology for process improvement based on the Scientific Method called Six Sigma (Bloom, 2013). Prior to Motorola’s coining of the term “Six Sigma”, companies for centuries had experimented with and implemented process improvement strategies. However, it is Motorola that is given credit for designing Six Sigma as a process improvement mechanism because Motorola was the first company to advertise its savings (in the millions) using Six Sigma methodology. Six Sigma’s focus is on eliminating statistical variation in a process to strive towards a goal of 3.4 defects per million opportunities (1 Six Sigma). In the early 1990s, James Womack, Daniel Jones and Daniel Roos developed a way of thinking based on Toyota’s Total Productive System (TPS) called Lean Manufacturing. Lean Manufacturing focuses on standardizing a process in order to eliminate waste. The two philosophies have merged within many companies to receive the benefits of both, forming what is now commonly
known as Lean Six Sigma (Smalley, 2010). Although Six Sigma and Lean were originally developed for use in manufacturing environments, service and transactional teams can also benefit from their principles.

Like the scientific method, Lean Six Sigma has a five phase process for statistical driven change that businesses can follow referred to as the DMAIC process (Define, Measure, Analyze, Improve, and Control). Lean principles can be incorporated at any stage of the process to add value by increasing the likelihood of process improvement success. During the define phase of a Lean Six Sigma project, a work unit would decide which process to focus on to define the scope of the project. The define phase focuses on the scope of the project and uses tools such as voice of the customer, brainstorming and value stream mapping. Brainstorming is used to determine which processes to focus on improving. The voice of the customer should drive the process of deciding what to work on first. Once a process has been identified, value stream mapping consists of listing the steps of the process in order and assigning a time to each step of the process. This is especially useful when trying to improve service processes, where timeliness is generally a key metric. A value stream map can also make it easier to determine where bottlenecks exist in the process (periods of waiting that hold up the process), and it provides a visual for a project team to develop a list of quick hit items where the solution is fairly obvious.

Once the scope of the project is defined, the project team is refined to ensure that all sides of the process have a voice – those responsible for day-to-day tasks, customers, management and representatives from any departments that might be effected by the change. If HR is involved in the project planning process from the beginning, knowledge of the integration of different departments within the company can be a huge asset during the team selection process. The project team then sets goals and time limits for the project. Goals should be measurable,
attainable, verifiable and realistic. Project timelines can be anywhere from two weeks to six months, depending on the scope and the frequency of the information. A baseline chart representing something that can be measured in the current state of the process is also created. The baseline is established prior to making any changes to the process (Moore, 2009).  

During the measure phase, additional information about the process is gathered. The system chosen to measure the process is tested for integrity through the use of a double check. The double check can be a manual process, or could be another computer system through which information is gathered. This double check is important because it shows management that the information gathered is consistent and reliable. This is especially important if you are attaching savings to that information.

After the project team deems the measurement system consistent, the analysis phase begins. During the analyze phase, Lean Six Sigma tools such as Design of Experiments (DOE) and Fishbone diagrams can help determine what factors will cause a positive change in behavior or efficiency in the process. Factors, or inputs, to the process with a potential to make a positive change can be determined through brainstorming. Statistically, only one-fourth of factors chosen will have any impact on the process if changed, and some may have an unintended negative effect, so it is important to have a control factor unaffected by the changes made during experimentation. Experiments should only be performed on a small sample of the population and work best if the participants do not know they are part of the experiment. The desired shift in any process would be to either move the average of the part of the process being measured

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1 See Appendix A for a sample baseline.
higher or lower, to reduce variation in the process, or both. The analysis phase ultimately determines the appropriate change needed to the process.

The implementation phase consists of taking the change that made a positive impact in the analysis phase with the sample group and applying it to the whole group. Some companies choose to implement in phases, choosing the easiest groups to change first to learn best how to approach more difficult groups. An implementation of a change is most effective when those involved in the process are made aware of the reason for the change. Prior buy-in to the idea of change helps to ensure that the change is permanent.

Perhaps the most important phase of a Lean Six Sigma project is the control phase. Once the change to the process has been made, the control phase ensures that the change made has been accepted by those affected by the change and that the process does not slide back to its original state. During this phase, measurements continue to be taken and monitored and savings, if any, calculated and reported. Savings from a project should be reported for no longer than 12 months (Shaw Six Sigma Black Belt Manual, 2009).

Strategies for Implementing Lean Six Sigma

For most companies, investing in Lean Six Sigma training and technology would be cost prohibitive unless it was applied across the entire organization. However, often the cost of not implementing this kind of strategy can be detrimental to an organization during a period of downturn. During a recession, companies usually look to cutting headcount as the primary means of reducing costs and increasing revenues (Mohrman & Worley, 2009). However, surveys conducted by Watson Wyatt of companies that used downsizing, reorganizing, and hiring freezes in order to reduce costs reported that companies cannot “cut their way to greatness” (Stott, 2001).
With this in mind, companies should look at other means of cost cutting throughout the organization through the use of Lean Six Sigma.

Lean Six Sigma generally starts in a company’s manufacturing processes, then once established in the organization, it is introduced to transactional and service oriented departments. However, even in a manufacturing department, Human Resources should be a part of the process, as the outcomes of projects can involve the shifting of responsibilities or reallocation of human capital. Lean Six Sigma is a large undertaking within any organization, and requires the support of upper management to be implemented successfully.

One of the hardest things any organization will face when trying to implement Lean Six Sigma is the resistance to change. However, a popular saying in Lean Six Sigma programs is “If you do what you’ve always done, you’ll get what you’ve always gotten” (Robbins). Saving money in an organization is always going to involve change. Change can be a difficult pill for employees and management alike to swallow, which is why it is so important to drive change from the top down and involve employees at all levels of the organization in process improvement projects.

In order for HR to be an effective partner in process improvement, HR needs to have a firm understanding of not only the business’s strategies, but also of the Lean Six Sigma process itself (Kleasen, 2007). Lean Six Sigma can be introduced to employees at all levels of the organization through what is referred to as either White-Belt or Yellow-Belt training. This training introduces employees to the statistical concepts behind Lean Six Sigma and encourages them to get involved in process improvement by teaching them how to think in terms of moving forward over standing still. Management and highly motivated non-management employees are

Appendix B for an example of a shift in the process.
generally trained at a slightly more in-depth level called Green-Belt. Green belts typically do the majority of the work on projects within their own work units, as they are most familiar with the processes that are being changed. Champions of the Lean Six Sigma program within a company that drive process improvement projects, become experts in statistical and lean tools and train green-belts and white-belts are called Black-Belts, with the most proficient being called Master Black Belts. These are normally employees that are devoted full-time to project management (Six Sigma Online Aveta Business Institute).

Results

*Improving HR Processes with Lean Six Sigma*

Once Lean Six Sigma has been introduced within an organization, employees will start to express their ideas for processes that need improved. HR should make sure that those employees have a consistent method of submitting these ideas so that they can be brought to the appropriate management and prioritized. HR should be a part of leading the implementation within an organization, developing training and integrating it into the very culture of the organization (Heuring, 2004). Leading by example, HR can focus on proving within its own areas that it is committed to the Lean Six Sigma process by applying it to processes inside of HR.

Typically, mid to large sized companies have a broad HR function that encompasses recruiting, training, paying, providing benefits for and determining incentives and compensation for employees within that organization. Within these various roles are many different processes that could potentially be costing the business in terms of efficiency and capital. As technology improves, it is often HR that is the last to catch up and in a recession, HR departments may find themselves needing to justify their very existence within a company to management (Swami.p and Prasad, 2011). This is where Lean Six Sigma can play a huge role inside of HR processes.
Businesses use Lean Six Sigma methodology to improve a process by minimizing the defects and/or waste within the process. In an HR process, Lean Six Sigma defines waste as any part of the process that does not benefit the customers of HR and defects as errors or mistakes in the process (Sarkar, 2009). Some examples of process waste in HR would be unnecessary forms, filing paperwork the company is not legally required to keep or that is already stored electronically, waste of resources (including human resources), and time spent waiting to complete tasks. Errors and mistakes would include anything that would cause the HR office to make corrections or any delay in the process outside of the norm. The key is to get HR employees to start thinking outside the box, rejecting the status quo in favor of a more efficient and cost effective process. Improvement of HR processes will lead to “improved internal customer satisfaction, greater motivation and job satisfaction of HR employees and, ultimately, improved business performance” (Wyper & Harrison, 2000). Communicating this to HR staff during implementation and beyond will help to motivate them to success in their process improvement projects and to continually be in a process improvement mindset.

When first introduced to the Lean Six Sigma process, HR employees will probably think of a lot of things that could be done better and changed with little to no effort. Those are what are often referred to as quick hits or low hanging fruit and can be undertaken without the need for a process improvement project. Other processes may seem like pain points to the employees, but they may not be able to determine the exact cause of the problem or how to fix it. This is when tools like value-stream mapping come in. The process of creating the value-stream map helps management see where the waste is located in the process to better know on what they should be working to change. Black belts can then develop a Benefits and Effort (B&E) matrix based on
the results of the value-stream mapping sessions and input from management and employees to help decide what to work on first (See Appendix D).

A good way to keep HR focused on continuous improvement is through the creation of an HR scorecard or dashboard that is visible to everyone in the organization (Sakar, 2009). Any type of measurement system that HR creates should coincide with that of the business’s strategic vision as a whole. An HR scorecard keeps HR accountable to its customers, which in turn motivates HR staff to strive to continuously do better. Metrics on the scorecard need to be S.M.A.R.T. (specific, measurable, attainable, realistic and timely) (Top Achievement). Key metrics for HR could include such metrics as reduction in controllable turnover, increased participation in wellness programs, reduction in HR keying errors, and reduction in time to hire. Making an HR scorecard a priority within the organization keeps HR professionals geared toward process excellence.

Conclusion

HR can use Lean Six Sigma tools to not only prove its worth to an organization, but also to operate as efficiently and cost effectively as possible. Lean Six Sigma’s proven success in various companies such as Dow, GE, and Shaw Industries, with millions of dollars in savings, makes it detrimental for mid to large sized companies to ignore, especially in a recession. Not only should HR be focused on improving its own processes within an organization, but it should also be involved from the implementation of Lean Six Sigma as a whole in the organization. HR can offer valuable insights into organizational structure, can create training materials for implementation and can help with human resource allocation to projects throughout the organization. HR is a fundamental part of any organization, and should lead by example by championing statistics driven change.
Bibliography


In this theoretical example, as employees punch the clock, the time in minutes from the scheduled time is measured (it is positive, regardless if the employee clocks before or after their scheduled start time). The average for the baseline is 9.6 minutes from scheduled start time.

The theory behind Six Sigma is that a process is given to normal fluctuations equivalent to a standard deviation of plus or minus 3 Sigma (Σ) (Taylor). Anything outside of this standard deviation represents special variation in a process. Sometimes special variation can indicate a positive in the process, such as an increase in efficiency. Other times, it can indicate a problem in the process. The baseline should show normal variation in the process, and any special causes should be removed.
The theoretical project team from the baseline (see Appendix A) does a Design of Experiment during days 16 through 30. The experiment is a one factor experiment, as the group hypothesizes that a policy change could improve the timeliness of employees. There is a noticeable shift downward in the process, indicating that the policy change had the desired effect.
### Appendix C

#### Theoretical Data Chart for Sample

<table>
<thead>
<tr>
<th>Interval</th>
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<th>Average</th>
<th>After Policy Change</th>
<th>Plus 3 Sigma</th>
<th>Minus 3 Sigma</th>
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<tr>
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All data in this chart was invented by the author for the purposes of illustration only, based on her own observations in Lean Six Sigma projects.
Appendix D

Benefit & Effort Matrix

- Quick Hits
- Major Projects
- Busy Work
- Not Worth It

= Potential Projects