



## Applying Breakthrough Improvement Tools to a Human Resources Problem: A Case Study

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**T**his case study details the application of Lean Six Sigma (LSS) methods and tools to solve a typical problem that might be encountered in a Human Resources department.

### Lean Six Sigma Breakthrough

The process and tools described here may not be familiar to all readers, so let's start by discussing what they are and why we would use them.

**What is LSS?** Lean and Six Sigma are methodologies and tool sets that can enable an organization to improve performance significantly. The tools and techniques are used to create breakthroughs to achieve substantially higher levels of performance quickly. Breakthroughs do not just happen. They require a systematic change process, one that can only be achieved with the “project-by-project” approach.

Lean Six Sigma helps product and service providers reduce Costs of Poor Quality (COPQ) – those costs that would disappear if every task was done perfectly the first time, every time. Costs of Poor Quality can also be defined as the difference between the theoretical minimum cost and the actual cost.

Improving products, processes, and services is a never-

ending pursuit. Achieving breakthroughs may require a tenfold improvement, or even better to reduce deficiencies to fewer than 3.4 parts per million (ppm), which is the Six Sigma level of performance from which the Six Sigma tool set gets its name. For an organization to continue making breakthroughs and meet the needs of its stakeholders, it must master the skills to plan, control, and improve quality, also known as the Juran Trilogy®.

Lean Six Sigma quality improvement takes place in a five-phase process: Define, Measure, Analyze, Improve and Control – or DMAIC (da-may-ik). We will discuss each of these phases and the results as they relate to the case study.

### Why would we use the LSS process and tools?

Organizations must improve the quality of their services and products in order to achieve and maintain their competitiveness. Services and products that were created to respond to customer needs may not meet their goal, or once-excellent products may no longer be good enough for today's challenging competition. Customers have multiple sources available to fulfill most of their needs and will switch suppliers when their needs are no longer being met or when another supplier offers superior products or services for less cost.

Too much variation in your processes creates deficiencies in the goods and services you deliver. These deficiencies erode financial margins and reduce customer loyalty. Reducing variation can lead to superior performance.

Merely improving average performance is not enough. Customers, costs, and profits are adversely affected by the variation in a process as well. Lean Six Sigma focuses on identifying variation in your processes and products, proving the root causes for that variation, and implementing improvements that both reduce the variation in the process and move the average closer to the customers' expectation.

Organizations more mature in their deployment of Lean Six Sigma have learned that these methods are not only useful for improving product or service creation processes, but also have a dramatically positive effect on the organization's performance when applied to the “business processes” such as Human Resource Management (HRM). Improved quality performance of internal processes like HRM contributes to the overall success of the organization by reducing wasted time and resources and increasing the capability of the organization to delight its customers.

**Too much variation in your processes creates deficiencies in the goods and services you deliver.**

## The Define Phase – What is the problem?

The problem addressed by this project was related to performance evaluations for employees transferring between departments within the company and was stated as follows:

*“Annual performance appraisals for employees transferring between departments are currently handled inconsistently. The hiring manager does not always receive information in a consistent, complete, or timely manner for completing annual employee performance reviews. For the period 8/01/06 through 7/31/07, there were 1,271 employee transfers representing 15 percent of total performance reviews. Per a sample of 120 managers that initiated performance reviews on transferred employees during this period, 90 managers, or 75 percent, produced reviews with inconsistencies. These inconsistencies were failures to evaluate the full 12-month time period for the transferred employee. These inconsistencies have the potential to impact employee morale, satisfaction and engagement.”*

This problem was clearly identified in measurable and observable terms about what issue the team was supposed to address. The problem was stated in such a way that it was manageable and dealt with specific aspects of the process performance.

Once the team had a clear statement of the problem to be solved, they needed to know what was to be accomplished as a result of solving it. Remove all undesirable effects of the problem? Reduce them? The team needed a goal statement:

*“Beginning with reviews in the second quarter of 2008, ensure 95 percent of transferring employees are evaluated based on 12 months worth of performance data starting from the last review received.”*

The goal set the stage for action and gave the team specific and measurable objectives to meet.

Other activities the team undertook during the Define Phase included creating a high-level process map, defining customers of the process and what they needed from the process, and defining the key terms associated with their project.

## The Measure Phase – How bad is the problem and what might be causing it?

The *Measure* Phase began by understanding the breadth and depth of the problem. This was done by analyzing symptoms (the outward evidence of the problem) and was a very important step leading to finding the root causes of the problem. This activity enabled the company to understand the current situation. How often was the problem occurring? How severe was it? What types of failures contributed most to the problem being analyzed? At what point in the process was the failure most often observed? These types of questions about the current situation must be answered to help understand better where the root causes may lie.

To assist in their analysis of symptoms, the team first constructed a detailed process flow diagram. This “picture” of the process helped them identify the key steps where the symptoms of the problem most often occurred.

As with all phases of LSS, the team had to collect data and, in this instance, answer questions about current process performance. Some of the questions were:

- Does the level of management conducting the review affect the process?
- Is the number of defects related to a manager’s level of experience with the company and/or as a manager?
- Do we experience more problems with transfers from subsidiaries?
- What is the nature of the problems/defects?
- Are managers responsible for higher volumes of reviews more prone to problems?

The team developed a formal plan to collect the data needed to answer the questions about process performance. They utilized focus group interviews to obtain much of the data needed.

Once the team understood the current process performance, they began to think about what could be causing the less than desired level of performance. Partly by utilizing the results from the focus group and partly by brainstorming what the team thought could be the causes; they came up with numerous possibilities. Those theories of causes were then organized into the cause-effect, or fish-bone, diagram shown in Figure 1.

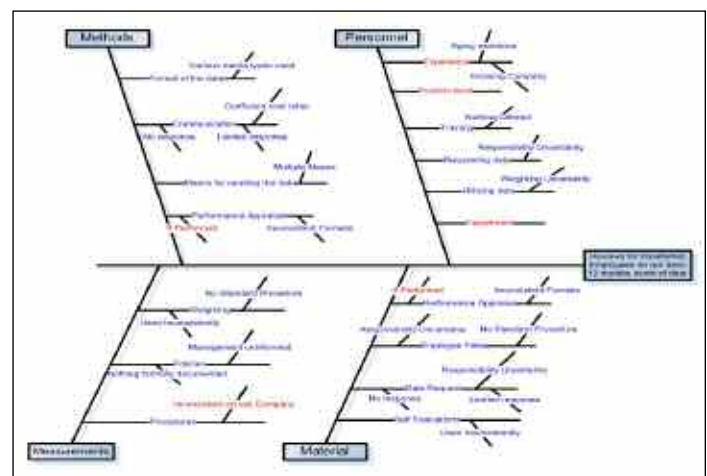


Figure 1. Cause and Effect Diagram.

Using tools to help prioritize the possible causes that were most likely to be true, the team selected the following theories of cause to investigate further in the *Analyze* Phase:

1. The more years of management experience, the less defects there are likely to be;
2. The more performance reviews per manager, the more defects;
3. The more transfer locations that are within/outside division or from a subsidiary, the more defects;

- The higher the level of management (supervisor, manager, director), the greater the chance for defects; and,
- The informality of the process for obtaining data from the transferring manager causes defects.

## The Analyze Phase – What are the vital few causes of the problem?

During the Analyze Phase the team collected yet more data, this time data specific to the questions about whether the supposed causes were true. Once the data were collected, they were analyzed using statistical and graphical tools to generate information that could be used to make a decision regarding the truth of each theory. The analysis led to the conclusion that only one of the theories of cause was true; *the informality of the process for obtaining data from the transferring manager causes defects.*

Avoiding the application of solutions to “causes” that have no real impact on the problem was one good reason for doing this type of analysis. It helped the team focus their efforts on alleviating the true cause of the problem without wasting time on things that really didn’t matter.

## The Improve Phase – What changes should we make to the process to eliminate or reduce the cause’s impact?

In the Improve Phase, the team considered a number of possible changes to the process that would allow them to meet the project goal of reducing the defects from 75 percent to 5 percent. The solution alternatives the team considered include:

- Automation – Partial process automation for manager notification and for measuring compliance;
- Formal exit-review report – Standard progress reports, along with an employee progress review meeting;
- With merit increase – Performing progress reports with merit increase interview;
- No time exceptions – Stop the practice of giving an exemption when performance reviews had been completed 30 days prior to transfer; and,
- Form used (no sit-down meeting) – Use a form to complete the review rather than having a face to face meeting.

It’s common to have several ideas on how to solve the problem, so a method was needed to help the team decide which possible solutions should be implemented. The tool used by this team was the Pugh Selection Matrix (see Figure 2).

Using the Pugh Matrix, the team scored each proposal on how well it fulfilled the criteria in the first column, those things Critical to Quality (CTQ) in the eyes of their customers. If a proposal was better than the current process at achieving a particular CTQ criterion, it was scored with a “+” and if worse a “-” and if the same an “s.” The worksheet applied weights to the scores and calculated the weighted total plusses and minuses for each solution alternative. The highest scoring alternatives were selected, in this case:

- Automation – After meeting with HR management and the subject matter experts, partial process automation was recommended for manager notification and for measuring compliance (Automation updates will not result in significant costs/resources).
- Formal report review – Standard progress reports, along with an employee progress review meeting was recommended by the team, supported by HR management and reinforced through a pilot group.

**Pilot and Acceptance Testing.** In order to test the proposed solutions, nine members of the original focus groups were randomly selected to review the prospective process. Each of the nine participants felt the proposed solution would help to eliminate defects and would be valuable to both management and the workforce. The Acceptance Test did result in some changes to the proposal, including making it a requirement for managers to provide a performance rating on each goal.

The solutions the team implemented resulted in a reduction of inconsistent performance appraisals of transferred employees from 75 percent of managers experiencing problems to only 4 percent, or a 94.7 percent improvement. Recall that the project goal was to have just five percent of managers experiencing problems, so the goal was exceeded as a result of this project.

## The Control Phase – What process monitoring should be put in place to assure the process changes are sustained?

If a project does not result in a sustainable improvement, then it has largely been a waste of time. In this case, the team developed a *Control Plan* to monitor the percentage of employee files not containing 12 months of data. Individual performance reviews are tracked daily with monthly statistical reporting. The Control Plan also provided a plan of action if the monitored subject fell outside the performance goals established; in this case, a maximum of five percent. Responsibility for taking action to regain process control was a key to sustainability of improvements.

Criteria	Rating (1-5)	Alternative Concepts				
		W/ Merit	No Time Exceptions	Automated	Formal Report/Review	Form Used (no sit-down)
Accurate Employee Information	5	+	+	+	+	+
Captures 12 months worth of data	7	+	+	+	+	+
Provides Data Timely	5	+	+	+	+	+
Simple Process for Management	4	-	-	+	-	+
Resources Required	5	-	-	-	-	-
Employee Satisfaction (Trust Index)	7	5	+	+	+	5
Standardization of Process	5	+	+	+	+	+
Ability to Track Compliance	4	+	5	+	5	5
<b>Sum of Positives</b>		5	5	7	5	5
<b>Sum of Negatives</b>		2	1	1	1	0
<b>Sum of Games</b>		1	2	0	2	3
<b>Weighted Sum of Positives</b>		33	36	44	36	30
<b>Weighted Sum of Negatives</b>		13	4	9	4	0
<b>Weighted Score</b>		20	32	35	32	30

Figure 2. Pugh Selection Matrix.

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### Conclusion

The project successfully applied the Lean Six Sigma methodology and achieved the goal of five percent or less defects. This saved the company (reduction in COPQ) approximately US\$56,000 per year as the result of eliminating time spent by Human Resources and managers dealing with deficient performance reviews after the fact. This savings is indicative that LSS methods applied to business processes can be effective in improving overall company performance.

### About the Authors



Joseph A. De Feo is president and executive coach of Juran Institute. As a leading executive coach, he is recognized worldwide for his training and consulting experience in enabling organizations to achieve business excellence. His varied areas of expertise include: coaching executives to understand key factors in driving enterprise-wide change programs, developing and deploying breakthrough management principles like Lean and Six Sigma, and working to deploy client strategic plans. As a leading subject matter expert, De Feo leads his team to help clients increase sales, reduce costs, and improve customer satisfaction through the deployment of system-wide transformation programs.

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Dennis J. Monroe is a vice president with Juran and holds certifications as Six Sigma Master Black Belt and Lean Master. In this capacity, Monroe works with companies in business performance assessment, Lean and Six Sigma deployment and training, Value Stream Management, and cost reduction employing a broad variety of management tools including 6S/Lean Manufacturing, Lean Six Sigma, Program Management, Value Analysis/Value Engineering, and Statistical Process Control. He can be reached at [info@juran.com](mailto:info@juran.com).

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