Six Sigma and Customer-Facing Processes

An Oracle White Paper
September 2003

ORACLE
SIEBEL
CUSTOMER RELATIONSHIP
MANAGEMENT

ORACLE

As companies are increasingly outsourcing noncore activities such as manufacturing and transaction processing, one of the last bastions of sustainable competitive advantage is their relationship with customers, employees, and partners. It is important to keep in mind that customer-facing processes are a conduit between a company and these key constituents.

If judiciously chosen and relentlessly driven from the top management, deployment of Six Sigma to customer-facing processes could create a significant competitive advantage and have a strong bottom-line impact.

INTRODUCTION

Six Sigma (or 6-σ) has been a widely used management tool to drive quality and process improvement over the past 20 years. Championed by companies such as GE, this methodology has gained widespread acceptance, particularly in manufacturing processes to drive toward zero defects. Companies have deployed it for thousands of processes to create billions of dollars of value for their shareholders. The impact of Six Sigma is far-reaching and is not limited to bottom-line improvement. It has helped create common terminology, common ways of defining and measuring key performance indicators (KPIs), and a fact-based thinking that creates a common platform for scalability.

While the success of Six Sigma is widely recognized within manufacturing processes, Six Sigma also applies to other areas of an organization. As companies and management have gained more experience with the concept, they have started using Six Sigma for many non-manufacturing industries and processes, such as accounts payable, research and development efficiency, and so on, to drive substantial improvements in the bottom line and customer satisfaction.

However, Six Sigma appears to have been underemployed for customer-facing processes[1] and functions, and its use is not well understood. If judiciously chosen and relentlessly driven from the top management, deployment of Six Sigma to customer-facing processes could create a significant competitive advantage and have a strong bottom-line impact. As companies are increasingly outsourcing noncore activities such as manufacturing and transaction processing, one of the last bastions of sustainable competitive advantage is their relationship with customers, employees, and partners. It is important to keep in mind that customer-facing processes are a conduit between a company and these key constituents. As such, consistency in meeting or exceeding customer expectations across every interaction with customers, employees, and partners will impact a company's success.

---

[1] The phrase "customer-facing processes" has been used in this paper for processes that are customer-, employee-, or partner-facing. It is used to differentiate these processes from "back-end processes" such as manufacturing, transaction processing, and so on.

Many of the world's leading companies such as GE, American Express, and JP Morgan have used Six Sigma methodologies to improve customer-facing processes, and the successes of these companies clearly cannot be ignored.

The core emphasis of this white paper is to provide an executive overview of when and how Six Sigma can be applied to customer-facing processes. In addition, it provides a brief overview of the Six Sigma methodology; an introduction to the Six Sigma concept, from both a mathematical and a process perspective; and outlines why, where, and how Six Sigma can be applied to customer-facing processes. In addition this paper outlines some of the key success factors for the implementation of Six Sigma to customer-facing processes and presents key conclusions.

What Is Six Sigma?

The definition of Six Sigma varies, but the concept is the same—it is the application of statistical techniques to detect, correct, and continuously improve variability or defects in processes.
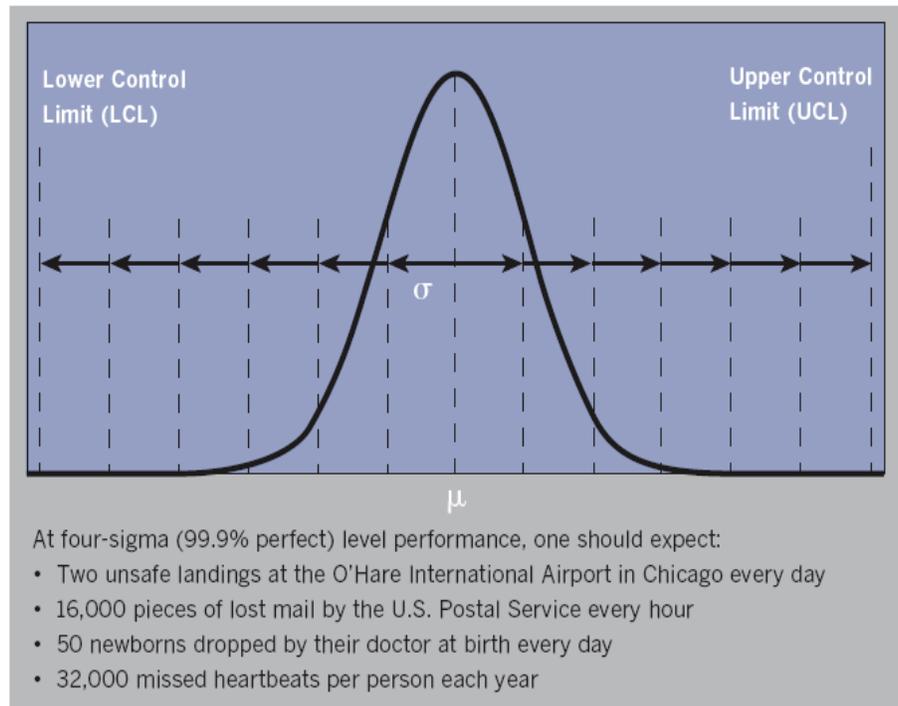
Six Sigma techniques strive to reduce variability, with the underlying philosophy that variability is undesirable. As an example, consider a retail bank, where a customer has applied for an automobile loan. While the customer is applying for the loan, the bank assures the customer that it will get back to the customer within one day. However because the bank has not controlled the variability of its loan application process, it often takes more than a day, and sometimes as long as a week, to get back to the customer, due to unforeseen circumstances such as the Social Security number being incorrectly communicated by the bank to the credit rating agency or the bank teller writing down the wrong spelling of the customer's name. The customer in this case would be very dissatisfied and, given the number of retail banking choices available, is likely to take his or her business elsewhere.

Such incidences are frequent in everyday life. Variability in these processes is often due to common or natural causes, that is, causes that are either unforeseen or cannot be helped. For example, a flash blizzard that keeps all employees away from work for two days without any electricity is a natural cause, and a small shift in machine tolerances is a common cause. These causes are difficult to eliminate and will be present in some form in any process. However, more often than not, variations occur due to assignable causes. These are causes that occur due to human or machine errors, which if identified and eliminated, can significantly reduce the variability in the process. The objective of the Six Sigma methodology is to reduce such variability.

The definition of Six Sigma varies, but the concept is the same—it is the application of statistical techniques to detect, correct, and continuously improve variability or defects in processes. The analysis for Six Sigma could be understood at two different levels: a statistical level and a process level.

Statistical Definition

Consider a process[2] whose output is measured through some metric (cycle time, success rate, and so on) that has mean "μ" (see Figure 1). Customers of this process expect the output to be between the lower control limit (LCL) and the upper control limit (UCL). The lower the variation of the process—that is, the lower the standard deviation, "σ"— the higher the chances that the output will lie between LCL and UCL. A process with 6-σ capability implies that only 3.4 times in a million occurrences[3] will the output be outside the desired limits. Keep in mind that Six Sigma is an arbitrary limit and, depending on the process, requirements may be 4-σ or 8-σ. That said, to put Six Sigma into perspective, consider what would happen if all processes were to be only 4-σ—there would be two unsafe landings at Chicago's O'Hare International Airport every day (see Figure 1). Most processes in everyday life lie between 2-σ and 3-σ.

At four-sigma (99.9% perfect) level performance, one should expect:
- Two unsafe landings at the O'Hare International Airport in Chicago every day
- 16,000 pieces of lost mail by the U.S. Postal Service every hour
- 50 newborns dropped by their doctor at birth every day
- 32,000 missed heartbeats per person each year

Figure 1: Statistical definition of Six Sigma.

For most executives, it may not be necessary to understand the mathematical details, but rather to understand the underlying components that drive continuous improvement of processes.

---

[2] For a more detailed introduction to statistical definitions, refer to www.isixsigma.com/library/content/Six Sigma-newbie.asp or Operations Management: Strategy and Analysis by Lee. J. Krajewski and Larry Ritzman.
[3] Strictly speaking, 3.4 errors per million is based on allowance of 1.5-σ variation to the mean, μ. While this is based on certain assumptions, most Six Sigma practitioners use the 3.4 errors per million as the standard.

Process Definition—The DMAIC Process

The DMAIC[4] (Define, Measure, Analyze, Improve, and Control) process is the most common and popular methodology and provides the underlying structure for most of the variations available today. It is a five-step process of continuous improvement (see Figure 2).
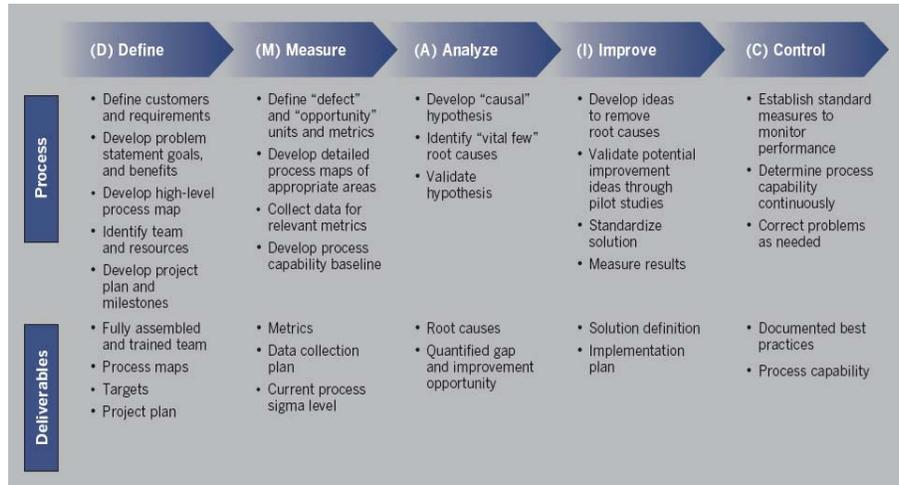
Figure 2: The DMAIC (Define, Measure, Analyze, Improve, and Control) process.

It is important to realize that the Six Sigma methodology is a way of ensuring that variations from a well-defined process are minimized. It helps detect variations and the underlying causes of variations—it does not define new processes. In situations where underlying processes either do not exist or are too broken to effectively implement Six Sigma, executives may consider use of Design for Six Sigma (DFSS). DFSS helps design processes from the ground up for Six Sigma. In many cases, DFSS can be used for long-term process improvement even when processes such as DMAIC are applicable in the short term. See the Appendix for more details on DFSS.

DMAIC is also often combined with other process tools such as Lean Manufacturing and/or Reengineering principles to utilize its full potential. At American Express, for example, Six Sigma is used in conjunction with Reengineering and has yielded significant benefits. American Express realized more than US$2 billion in savings from the program in 2002, more than 10 percent of which was from Six Sigma programs.[5]

---

[4] In the next section, a detailed example of the use of this methodology is shown.
[5] Interview with a Six Sigma professional at American Express and an internal note written by American Express Chairman, Ken Chenault.

Use and Impact of Six Sigma on Companies

Pioneered by Motorola in the early to mid-1980s as a way of reducing defects in its manufacturing processes, Six Sigma has since been applied to almost all kinds of processes at hundreds of companies. Motorola engineers felt that traditional quality levels—measuring defects in thousands of opportunities—didn't provide enough granularity. Instead, they wanted to measure the defects per million opportunities (DPMO). As early as 1990, Motorola had perfected the art of Six Sigma. Its portable radio division, for example, had achieved a 370 percent reduction in defects per million parts, 40 percent reduction in manufacturing cycle time, and 60 percent increase in productivity.[6] Six Sigma helped Motorola realize powerful bottom-line results. Motorola has achieved more than US$16 billion in savings as a result of Six Sigma efforts across the company to date.

The company that has provided widespread visibility to Six Sigma is GE. At GE, Six Sigma is a key component of the culture. It has been applied to hundreds of processes across every operating company of GE. Since the launch of Six Sigma in 1995, after an initial one to two years of break-even returns, GE has reported US$750 million in benefits by the end of 1998, US$1.5 billion by the end of 1999, and US$5 billion-plus now. GE's operating margins, which for decades hovered around 10 percent, continued an upward march every quarter since the introduction of Six Sigma and became as high as 15 percent in 1999. Executives at GE attribute much of that success to Six Sigma programs.[7]

The primary driver of Six Sigma deployment is clearly a significant impact on a company's top-line and bottom-line performance. However, its intangible benefits cannot be ignored and are perhaps even more significant. It has the ability to fundamentally impact the DNA of a company. Some of the key benefits that companies have experienced as a result of Six Sigma are:

- **Customer Satisfaction**—Six Sigma is a program that is driven outside-in, that is, it begins with the customer. The emphasis is on understanding customer needs and translating them to requirements from core processes. As such, Six Sigma programs create a culture where the customer comes first and there is an unrelenting focus on exceeding customer expectations. As Jack Welch explains:[8] "The best Six Sigma projects begin not inside the business but outside it, focused on answering the questions, 'How can we make the customer more competitive? What is critical to the customer's success?' One thing we have discovered with certainty is that everything we do that makes the customer more successful inevitably results in a financial return for us."

- **Continuous Improvement Culture**—Six Sigma creates a continuous improvement mentality with concrete performance improvement goals for

---

[6] *Operations Management: Strategy and Analysis*, Lee. J. Krajewski and Larry Ritzman.
[7] *The Six Sigma Way*, Peter S. Pande, Robert P. Neuman, and Roland R. Cavanagh.
[8] Address to GE company annual meeting, Charlotte, North Carolina, April 23, 1997.

everyone. It brings discipline to the management processes. Companies have used it effectively to align incentive structures to Six Sigma implementation and accomplishments.

- **Common Platform for Growth**—Six Sigma creates a common terminology across the organization and a common way for defining and measuring KPIs. This creates a common platform for training and nurturing of future leaders within the company and thus establishes a platform for scalability.

APPLICATION OF SIX SIGMA TO CUSTOMER-FACING PROCESSES

To many people, the applicability of Six Sigma to customer-facing processes is not obvious. Most customer-facing professionals, particularly in sales and marketing, do not see what they do as processes, but rather as events (for example, closing a sale is an event and not a process). Also, Six Sigma is traditionally considered to be a tool to eliminate defects, and it is not obvious what would constitute a defect or an error within customer-facing processes. Many people also argue that every customer is different and as such, standardizing processes will result in inferior services. These reasons, however, are either incorrect or insufficient to dismiss the application of Six Sigma to customer-facing processes.

How Is Six Sigma Applicable to Customer-Facing Processes?

First, while it is true that customer-facing processes are very different from back-end processes, application of Six Sigma should only be more important to customer-facing processes. Customer-facing processes often form a significant part of the cost structure and have a strong impact on revenue-generating activities. As an example, most software companies spend 20 to 40 percent of their revenues on sales, marketing, and other administrative activities. Also as more companies are outsourcing manufacturing and other back-end activities such as transaction processing, their key differentiating assets are their customers, partners, and employees. As such, how well companies operate with respect to processes pertaining to these constituents is a key determinant of success.

Second, despite its origination within manufacturing, Six Sigma has been successfully applied in many other industries and functions, such as research and development, accounts payable and receivable, purchasing, call center, sales and marketing, and many others. One needs to recognize that variability within customer-facing processes is as harmful, if not more harmful, as variability in back-end processes. Consider a call center, where customers are calling to find out the status of their shipment. Typically most such requests need to follow a standard process wherein the customers will be greeted, asked to provide a tracking number, provided an answer, and thanked for calling.[9] Readers familiar with queuing theory can recognize the fact that the higher the variance in talk time, the higher will be

---

[9] This is an oversimplified version of a process. Many call centers will have a combination of interactive voice response coupled with potential up-selling steps.

the wait time for callers. At the same time, staffing needs will be higher for the call center, thus simultaneously resulting in higher costs and lower customer satisfaction.

Third, while there is some merit to the fact that too much standardization may result in a decrease in customer or employee satisfaction since each interaction may be different, there are many components within customer-facing processes that can be standardized. One would be surprised at how many standardized components there are to every customer-facing process, such as filling out f orms, requesting customer information, following up on customer requests, and so on. Many of these subprocesses, if standardized, can yield dramatic benefits in performance.

Finally, nothing succeeds like success. Many of the world's leading companies have successfully used Six Sigma to achieve performance breakthroughs in their customer-facing processes. Examples include

- JP Morgan Chase has implemented Six Sigma to reduce cycle time for new account openings in branches by 30 percent and to inbound calls by 25 percent for new accounts.[10]

- GE Plastics has used Six Sigma to reduce the number of days it takes to fill an open position.[11]

- A telecom services company used Six Sigma for its order-handling processing, cutting down US$1 million in expenses and making processes faster.[12]

To Which Processes Should One Apply Six Sigma?

Judicious selection of processes is critical to the success of Six Sigma. This section outlines a methodology for selecting the processes to which Six Sigma can be applied (see Figure 3, next page). Throughout this section, an example of a European telecommunications equipment manufacturer has been used to illustrate the concepts. This particular manufacturer is one of the global leaders in telecommunications equipment. However, it has struggled to gain any traction in the U.S. market. Application of the Six Sigma methodology, in this example, will illustrate how this company can address its challenges in the U.S. market to achieve a leadership position.

Define Objectives—Application of Six Sigma methodology begins with the company's core profitability drivers and critical customer needs. This ensures that any downstream step will finally result in enhancing customer satisfaction and drive profitable growth for the company. In the case of the telecommunications

---

[10] "Some Six Sigma Thoughts from JPM Chase Adviser," Chris Costanzo, American Banker, June 26, 2002, Vol. 167, Issue 122.
[11] "Six Sigma: What It Is and How to Use It," Hal Plotkin, Harvard Management Update, June 1999.
[12] *The Six Sigma Way*, Peter S. Pande, Robert P. Neuman, and Roland R. Cavanagh.

equipment provider, its core challenge in the U.S. market is that the U.S. providers have a large installed base, which makes it difficult for the European provider to penetrate the U.S. market. As such, the core objective of the European telecom equipment provider is to increase penetration in new customer accounts.

Identify Core Processes—Once the objectives have been defined, one needs to define the core processes that drive or impact that objective. While there are often many processes, careful investigation will reveal that only a few of them are critical to achieving the desired objective—such processes are good candidates for Six Sigma implementation. To continue with the aforementioned example, one of the core processes for this telecom equipment company is improving the opportunity management process. Since there are relatively few leads in the sector, the ability to close qualified leads is critical.
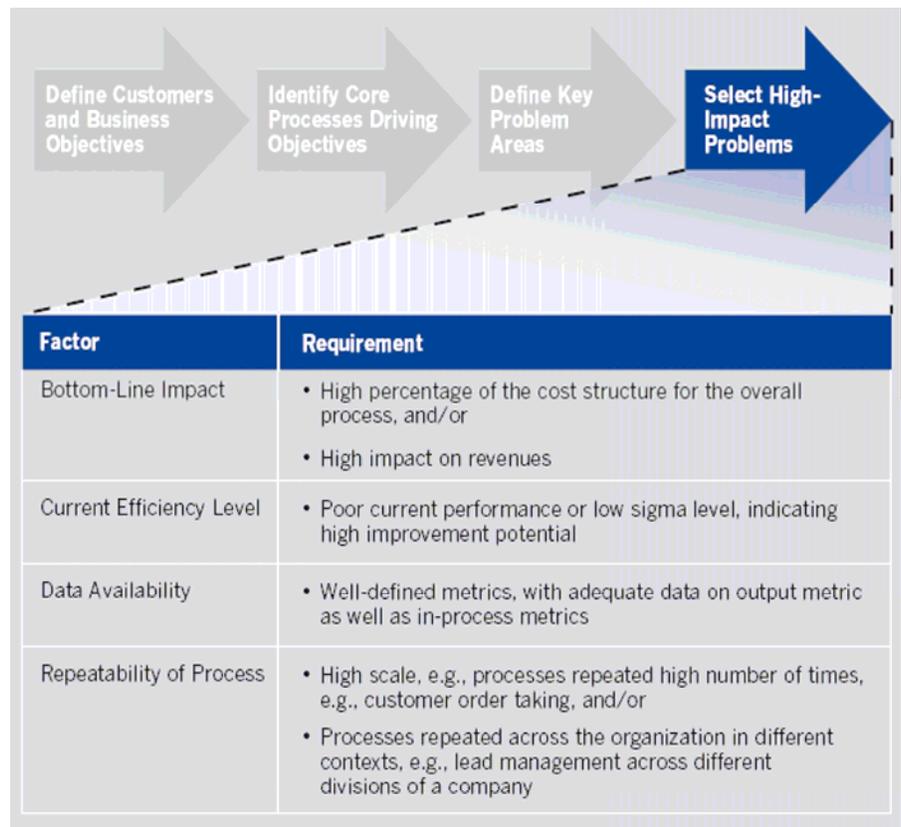

Figure 3: Steps in process selection.

Define Key Problems—Six Sigma is applied to well-defined, measurable problems. As such, one needs to further identify what the problems are, and not just the processes. Typically, interviews with customers and with key business executives, basic fact-based analysis, and brainstorming can reveal key problem areas. For example, for this particular telecommunications company, one of the key problems is that salespeople are not able to spend enough face-time with customers. Current processes demand too much of their time being spent on administrative and reporting tasks.

Select High-Impact Problems—Through brainstorming and analysis, one would typically uncover several problem areas. As a final step, one needs to prioritize these problems and select the ones where potential for impact is high. For example, one of the core areas of pain for large telecommunications equipment providers is that the sales cycle is complex and the customer is touched by many employees from within sales, technical sales, application engineering, and so on. Often the sales team is not able to fully leverage the knowledge gained from these conversations, as many duplicate records exist for the same potential customer, and the customer history is dispersed across these different records. This happens largely due to poor compliance with data quality processes. In addition to the opportunity management process, the data quality processes also impact

effectiveness and efficiency of the campaign management, lead management, and services processes. Lessons learned about data quality in one process can be applied to many others. Such processes, therefore, could qualify as high-impact processes.

Figure 4 describes some of the key factors[13] that could drive selection of high-impact processes. Actual selection is a judgment call and requires experience with Six Sigma implementation. Regardless of which processes are selected for Six Sigma application, it is important to understand that data availability and quality will drive the extent of the impact from Six Sigma efforts—whether it be in the front office (for customer-facing processes) or the back office (for inventory, manufacturing, or payroll processes).

Define Customers and Business Objectives	Identify Core Processes Driving Objectives	Define Key Problem Areas	Select High-Impact Problems

Factor	Requirement
Bottom-Line Impact	• High percentage of the cost structure for the overall process, and/or • High impact on revenues
Current Efficiency Level	• Poor current performance or low sigma level, indicating high improvement potential
Data Availability	• Well-defined metrics, with adequate data on output metric as well as in-process metrics
Repeatability of Process	• High scale, e.g., processes repeated high number of times, e.g., customer order taking, and/or • Processes repeated across the organization in different contexts, e.g., lead management across different divisions of a company

Figure 4: Key drivers of high-impact problems.

Depending on the industry, the company, and the particular objectives, good candidates for processes to which Six Sigma can be applied may vary. However, there are certain processes that appear to be strong candidates for most companies and situations. In call centers, improving the call-handling process to increase the first call resolution rate is one such example. Similarly, in sales, improving the yield rate of leads to opportunities, and opportunities to orders, are examples of processes for which many early-adopter companies have deployed Six Sigma.

[13] Interview with a Six Sigma professional at American Express.

Figure 5 provides a list of some sample processes that could be good starting points for many companies.[14]

Sales	Marketing	Call Centers
• *Lead qualificaton:* Reduce occurrence of nonqualified leads in the pipeline • *Opportunity to sales closure:* Increase customer face time • *Customer order entry process:* Reduce order entry errors	• *Event management:* Reduce no shows after registration • *Campaign management:* Increase response rate • *Customer database management:* Reduce duplicate or obsolete entries	• *Inbound call handling:* Increase first call resolution rate • *Inside sales:* Decrease average hold time • *Email customer service:* Reduce follow-up call percentage

Partners	Employees	Field Services
• *Partner qualification:* Reduce time to qualify new partners • *Partner commissions:* Reduce errors in calculation of partner commissions • *Collaborative lead management:* Reduce percentage of leads not followed up within one week	• *Recruitment:* Reduce time to fill new positions • *Performance management:* Increase percentage of semi-annual reviews completed on time • *Training:* Reduce percentage of enrollment cancellations one week prior to a training event	• *Service cycle time:* Decrease service cycle time • *Scheduling:* Reduce or eliminate double bookings for service personnel • *Warranty entitlement:* Reduce percentage of customers availing free service outside of service entitlements

Figure 5: Examples of common high-impact problems.

Application of Six Sigma to a Customer Support Center[15]

Call centers, particularly those providing customer services, are highly apt for implementation of Six Sigma. Tasks are highly repetitive, cost efficiencies are critical, and processes are well defined. Cost of service, on a per-call basis, could often exceed US$5 or even US$10. Therefore, improvements in customer service processes can lead to a significant enhancement in customer satisfaction as well as a decrease in operational costs.

This example illustrates the use of the Six Sigma methodology within a customer service call center for a large, diversified high-technology company, ABC Enterprises. ABC sells computer hardware, peripherals, software, and other electronics items to consumers. Given the continued downturn in the industry, there is a strong pressure on call center management to reduce costs. At the same time, the products that ABC sells are getting increasingly commoditized, and high customer satisfaction is critical to retaining customers.

Prior to the implementation of the DMAIC process, it is important that a specific problem has been identified. Preliminary analysis and benchmarking by the internal Six Sigma task force at ABC indicated that one of the key drivers of cost in the call center is the average talk time. Average talk time impacts not only the time that agents spend on the phone, but also the time that agents spend after the call. The

---

[14] Interview with Paul Saden, Paul Saden Companies, and executives from American Express and GE.
[15] Call center is taken here as a representative example for a customer-facing function. Six Sigma can similarly be applied to processes within sales, marketing, alliances, and so on.

average talk time, therefore, is a key driver of the people-costs in a call center, which is a significant portion of the cost structure of a call center.

Define—To apply Six Sigma to this specific problem, the first step is to clearly define the problem scope, objectives, time frame, and project team. In this case, the call center management and the company's Six Sigma task force defined the problem as the following:

- Decrease average talk time from ten minutes per call to seven minutes per call within three quarters

- Increase customer satisfaction index by 20 percent over the next three quarters

At the same time, a project team was created, consisting of a Six Sigma Black Belt,[16] one call center supervisor, one call center agent, and one IT person.

Measure—The next step in the application of Six Sigma is to collect the relevant data. As explained earlier, Six Sigma is a fact-based, objective methodology and cannot work without data. It is therefore critical to define the right metrics and measure them over a period of time to establish a baseline, that is, as-is measures. Some of the common metrics for the identified problem could be

- Average talk time

- Number of times the customer is put on hold per call

- Number of transfers per customer per call

- First call resolution rate

- Customer satisfaction index

- Average hold time

It is important that metrics other than the ones for which the goals have been defined are measured as well. This is necessary because sometimes improvement in one metric could negatively impact other metrics, unless proactively controlled. For example, average talk time could be reduced if agents were to close calls without fully resolving customers' problems. However, this will adversely impact the first call resolution rate and the customer satisfaction index. For this reason, first call resolution rate and customer satisfaction should also be measured and baselines established along with average talk time. Another reason to more comprehensively measure metrics is that many of these metrics might reveal the underlying drivers of the problem.

During the Measure phase, the team also needs to define the data collection methodology. For example, since Six Sigma measures defects, many of the continuous variables such as average talk time will need to be converted to discrete

---

[16] A team leader, trained in the DMAIC process and facilitation skills, responsible for guiding an improvement project to completion.

variables. In this example, a defect will be termed "average talk time > 7 minutes," and the project team will need to track the number of defects.[17]

Analyze—This is a very critical part of the DMAIC process. In this step, one identifies the root causes of the problem. For most real-life problems, there can be many underlying root causes. The golden rule for this stage is to keep asking the question "Why?" until all the root causes are clearly identified. In this example, one of the root causes for a high average talk time could be the fact that agents take a long time to look for solutions to questions asked by customers. If one were to dig deeper, one would realize that agents take a long time to look for solutions because of two underlying reasons:

1. All calls are routed on a first-available basis, regardless of the customer problem. As a result, even when agents with relevant expertise are available, calls may be routed to another agent who is also available.

2. Agents reinvent the wheel every time they talk to a customer. While a problem may have been addressed by an agent in the past, there is no mechanism for other agents to leverage that knowledge.

It is important to realize that the underlying root causes can be plenty, and the project team will need to prioritize the causes to focus its efforts.

Improve—Having identified the underlying root causes to some of the problems that impact the objective, the next step is to determine solutions. Often these solutions emerge directly from the root causes. In this example, where one of the root causes is the long time it takes for agents to find solutions to customer problems, the following solutions could be applicable:

*   Modify the menu options in the interactive voice response system to seek customer input on the product or service that the customer is calling about, and use that information to route the call to the first available agent who has recognized expertise in that area.

*   Create a keyword-searchable microsite that logs problems and suggested solutions.

*   Analyze, on a weekly basis, the top ten problem areas for customers and keep links to the solutions for these problems on agents' desktops.

Figure 6 (next page) outlines some of the common improvement steps one could take to address the root causes.

Control—Implementation of new processes requires vigilance and monitoring. Lou Gerstner says in his book, <u>Who Says Elephants Can't Dance</u>:

"People don't do what you expect them to do, they do what you inspect them for."

---

[17] For a more detailed treatment on data collection, refer to *The Six Sigma Way*, Peter S. Pande, Robert P. Neuman, and Roland R. Cavanagh.

In this call center example, it is important that the key variables defined in the Measure step are continuously monitored. At the same time, incentives for the key personnel need to be aligned to achievement of specific objectives. For example, for the call center management, a portion of the bonus should be aligned to the specified average talk time goals. At the same time, a portion of the IT team's bonus should be tied to the timely completion of the keyword-searchable microsite of past problem resolutions.
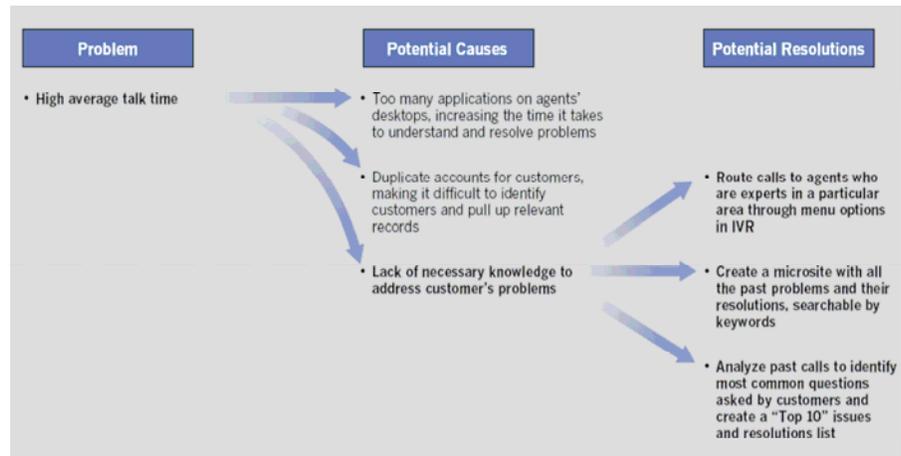

Problem	Potential Causes	Potential Resolutions
• High average talk time	• Too many applications on agents' desktops, increasing the time it takes to understand and resolve problems	
	• Duplicate accounts for customers, making it difficult to identify customers and pull up relevant records	• Route calls to agents who are experts in a particular area through menu options in IVR
	• Lack of necessary knowledge to address customer's problems	• Create a microsite with all the past problems and their resolutions, searchable by keywords
		• Analyze past calls to identify most common questions asked by customers and create a "Top 10" issues and resolutions list

Figure 6: Potential solutions to root causes.[18]

Implementation Process for a Six Sigma Program

Implementation of a Six Sigma program to any organization requires five distinct steps (see Figure 7, next page):

1. **Assess Readiness—**It is important that the organization to which Six Sigma is being applied is indeed ready for such a massive effort. As emphasized earlier, for Six Sigma to be possible, an organization needs to have well-defined processes in addition to defined metrics and associated data. Without these, Six Sigma cannot be applied. Also one must realize that the application of Six Sigma to customer-facing processes, particularly within sales and marketing, is more difficult compared to back-end processes. This is driven by the fact that relevant data is often nonexistent and process orientation is low. As such, some level of organizational experience with Six Sigma is necessary prior to its application to customer-facing processes.

2. **Secure Commitment—**Six Sigma is a program that entails significant effort from all ranks within the organization. Employees, and in many cases partners, will need to change the way they do things. In addition, Six Sigma will have its own requirements in terms of time commitment from many employees. Because of this, it is important that the top leadership is

---

[18] Bullets in bold indicate the path taken in the DMAIC process in the given example.

convinced of the benefits of Six Sigma; is aware of the underlying people, process, and technology issues; and has communicated the requirements for cooperation from all employees.

3. **Prepare**—During this phase, one needs to define the macro-level processes and select the processes to which Six Sigma would be applied initially. For each impacted process, team leaders should be identified—these are typically people who are Black Belt-or Master Black Belt-certified in Six Sigma. They in turn, will need to train the key employees. Finally, during this phase, schedules and timelines need to be defined.
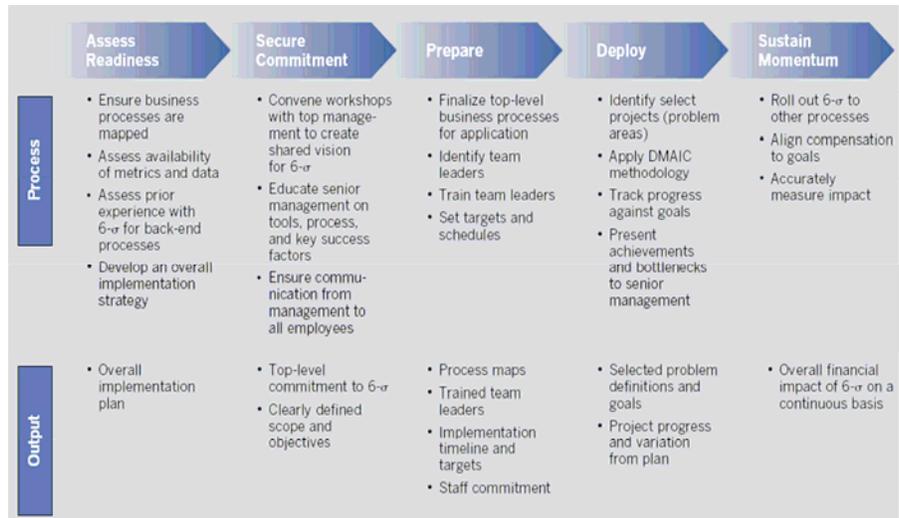
	Assess Readiness	Secure Commitment	Prepare	Deploy	Sustain Momentum
Process	• Ensure business processes are mapped • Assess availability of metrics and data • Assess prior experience with 6-σ for back-end processes • Develop an overall implementation strategy	• Convene workshops with top management to create shared vision for 6-σ • Educate senior management on tools, process, and key success factors • Ensure communication from management to all employees	• Finalize top-level business processes for application • Identify team leaders • Train team leaders • Set targets and schedules	• Identify select projects (problem areas) • Apply DMAIC methodology • Track progress against goals • Present achievements and bottlenecks to senior management	• Roll out 6-σ to other processes • Align compensation to goals • Accurately measure impact
Output	• Overall implementation plan	• Top-level commitment to 6-σ • Clearly defined scope and objectives	• Process maps • Trained team leaders • Implementation timeline and targets • Staff commitment	• Selected problem definitions and goals • Project progress and variation from plan	• Overall financial impact of 6-σ on a continuous basis

Figure 7: Six Sigma program implementation process.

4. **Deploy**—This is the phase where the DMAIC methodology is deployed across clearly defined problems for the selected processes. During this phase, progress needs to be continuously monitored with respect to the plan, and regular progress review meetings must be held with senior management. Targets for improvement will need to become part of the performance evaluation for all relevant employees.

5. **Sustain Momentum**—Once initial successes have been achieved, the momentum should be leveraged to apply it to other problem areas and to other processes. If properly deployed, Six Sigma has the capability to become a way of life.

KEY SUCCESS FACTORS

Implement Six Sigma in Customer-Facing Processes Only When There Is Some Organizational Experience with Six Sigma—While Six Sigma is as applicable to customer-facing processes as it is elsewhere, its application is often trickier. This is driven by the fact that often less data is available, definition of a defect is not always obvious, and basic process orientation is lacking. It is therefore important that Six Sigma has been previously deployed elsewhere in the organization, that there are trained Six Sigma professionals, and that successes have been communicated.

Tailor Vocabulary to Make It More User-Friendly—Most organizations trivialize the importance of appropriate language. Six Sigma in its traditional form emphasizes defects and variation. One must recognize that such vocabulary may be perceived as threatening to many customer-facing employees, particularly in sales and marketing. Unlike defects made by machines, these are defects introduced by humans, and as such, it is important that appropriate care is taken while training and gaining commitment.

Do Not Overemphasize Statistics, Particularly for Processes That Have Previously Never Been Measured—Given that most customer-facing processes have not been measured or monitored in the same way as back-end processes, employees may be overwhelmed with the statistical rigors of Six Sigma. It may be necessary to dumb down the process and gradually increase the rigor. In an interview, a Six Sigma Black Belt at GE deploying the Six Sigma process for sales processes commented that people often get muddled up in the statistics of the process, which is not appropriate for customer-facing processes. It is more important to follow the basic DMAIC approach, which places emphasis on defining measurable problems. Statistics should be used only when a certain level of capability with the process has been achieved.

Start Small and Achieve Quick Wins—As has been repeatedly emphasized, use of Six Sigma in customer-facing processes is not intuitive for most people. Therefore, it is vital that Six Sigma be initially applied only to select, high-potential processes. Success from these initial wins will go a long way in gaining the commitment for future deployment of Six Sigma to other processes.

Make the Process Customer- and Profitability-Driven: Results Will Only Be as Good as the Goals—It is important to note that any process could be made to achieve a 6-σ capability by relaxing the limits of successful outcomes. For example, allowing a four-day turnaround for a customer query instead of two hours. Therefore when people comment that their processes are 5-σ or 6-σ, it may actually mean nothing unless these are goals driven by the customer. As such, one must ensure that the limits are set by keeping in mind customers' needs. If the customer is not satisfied with the limits, then even achieving 7-σ with the relaxed limits is tantamount to misrepresenting the truth.

Pay Due Respect to Change Management—Recognize that Six Sigma involves a completely new way of doing things, particularly in customer-facing functions. In an environment where most processes are not measured, many people will feel exposed, and resistance to change may itself become a bottleneck to achieving any impact. Rigorous change management principles such as top-level commitment, end-user training, and creation of necessary incentives (and penalties) will be important.

CONCLUSION

Six Sigma is a powerful tool in the arsenal of today's executives and has grown significantly in its maturity over the last half a decade. It can impact all the core levers of success for a company—revenue increase, cost reduction, and improvement in customer satisfaction. The time has come for senior management to give more serious thought to its application to customer-facing processes. With the advent of today's enterprise software systems within customer-facing functions, definition of processes and availability of data are not as significant barriers as they were in the past. Also, with the relative maturity of Six Sigma, its practice is well understood, and there is a higher availability of professionals familiar with the practice of this concept.

Executives must, however, be prudent in its application and recognize the limitations of Six Sigma. Six Sigma is a way of ensuring that processes are followed consistently; it is not a substitute for good process design.

Six Sigma can impact all the core levers of success for a company—revenue increase, cost reduction, and improvement in customer satisfaction.

APPENDIX: DESIGN FOR SIX SIGMA (DFSS)

While Six Sigma, using the DMAIC process, helps fix what is broken—which is obviously a necessary tool for a process that is already up and running—Design for Six Sigma (DFSS) helps design processes that do not break in the first place, processes that do more, and cost less. In general managers should consider using typical Six Sigma processes such as DMAIC for short-term fixes and DFSS for long-term process innovations. Figure 8 defines the relationship between DMAIC and DFSS.[19] It is common to see that benefits from DMAIC will plateau at some point. To take the process to the next level of capability, one may need to apply DFSS. Given the relative lack of process orientation in most customer-facing processes, it is likely that managers will need to think about DFSS more than they have had to for back-end processes.
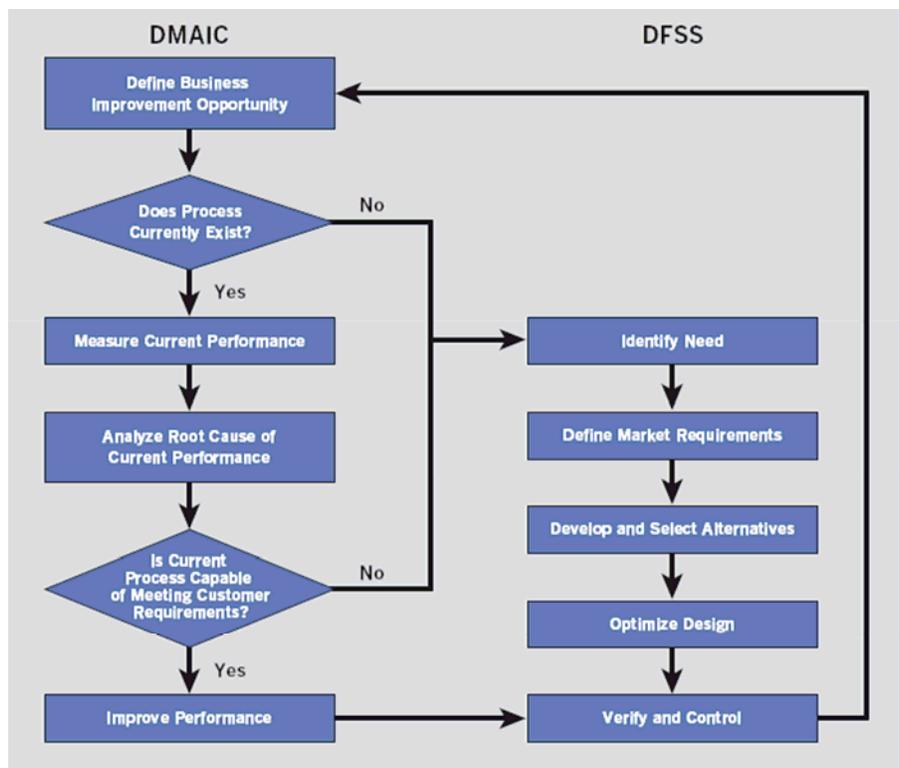
Figure 8: Relationship between DMAIC and DFSS.

Like Six Sigma, companies have used different processes to accomplish DFSS objectives. However most of these processes are similar at a basic level, although the underlying tools used and emphasis within the process may be different. The

---

[19] *Strategic Six Sigma*, Dick Smith and Jerry Blakeslee with Richard Koonce.

popular ones include DMADV, IDOV, IDDOV, and many others. Figure 9 describes the IDDOV process,[20] one of the most popular DFSS processes.
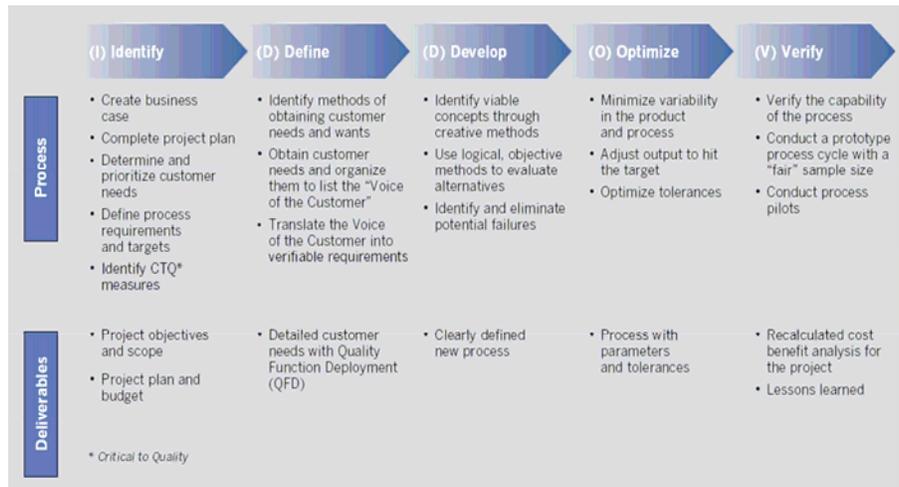

Figure 9: The IDDOV process for DFSS.

---

[20] *Design for Six Sigma*, Subir Chowdhury.

ORACLE®