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SEPTEMBER 2007



• TURNING THINGS AROUND

**Lean Six Sigma Rescues
Pave Hawk Contract p. 21**

PLUS:

**Get Clued in to
Customer Loyalty p. 26**

**Experiments:
Go in With a Plan p. 88**

Contents

SEPTEMBER 2007 | VOLUME 40 NUMBER 9



CHECK OUT
The ASQ website!

www.asq.org

- Web Watch.
- Author guidelines.
- Searchable database of ASQ abstracts.
- Index of back issues.

For ASQ members only:

- Salary surveys from 1995 to 2006.
- Complete feature articles since 1995.
- QP Discussion Board.
- Back to Basics in Spanish.

FEATURES

QUALITY IN THE MILITARY

21 Army Aviation Depot Does an About-Face

Lean Six Sigma and renewed quality management planning propelled one military facility to new heights of efficiency and helped save a key contract.

JAMEY GIDDENS, publicist, Corpus Christi Army Depot, Corpus Christi, TX

CUSTOMER LOYALTY

26 Build Loyalty Through Experience Management

Organizations' best customers are the ones emotionally connected. Experience quality management guides organizations in delivering the right feelings to customers and building loyalty.

LEONARD L. BERRY, chair in retailing and marketing leadership, Mays Business School, Texas A&M University, College Station, TX

LEWIS P. CARBONE, chief experience officer, Experience Engineering, Minneapolis

BALDRIGE NATIONAL QUALITY PROGRAM

33 Avoid Random Acts Of Improvement With Baldrige

If organizations use lean and Six Sigma on just any project, they won't necessarily be improving the right things. Using the Baldrige model can help your organization identify the right projects that have the most impact.

JOHN WERNER, principal and owner of JW Associates Ltd., Pawcatuck, CT, and portfolio project manager with Pfizer Global Research and Development, Groton, CT

AWARDS

42 Annual Quality Awards

Know someone deserving of a quality award? This list details the automotive, government, international, national and state quality related awards recognizing excellence in the quality field.

SIX SIGMA

45 Six Sigma and Baldrige: A Quality Alliance

Incorporating these two complementary methods creates a powerful approach for organizations to pursue quality and attain performance levels set by the Baldrige model.

MAHOUR MELLAT-PARAST, assistant professor of decision sciences, University of North Carolina, Pembroke

ERICK C. JONES, assistant professor of industrial and management systems engineering, University of Nebraska, Lincoln

STEPHANIE G. ADAMS, associate professor and associate dean for undergraduate education, University of Nebraska

DEPARTMENTS

6 Up Front

Making the 'decision' easier.



*Massive toy recall
no fun for China p. 12*

8 QP Mailbag

No relation between age and innovation ... The worth of J.D. Powers surveys ... more.

8 Mr. Pareto Head

12 Keeping Current

Toy industry's recent recalls ... Association survey findings ... New food management standard published ... more.

52 3.4 per Million

Use DMAIC to make improvement part of 'the way we work.'

55 Career Corner

The new job security.

56 Statistics Roundtable

Detecting dependent observations in multivariate statistical process control.

72 Standards Outlook

QuEST Forum's TL 9000 measurements handbook Release 4.0.

76 Measure for Measure

Qualitative indications from quantitative instruments.

78 QP Toolbox

79 QP Reviews

81 QP Calendar

88 Back to Basics

Plan experiments to prevent problems.

SPECIAL ADVERTISING FEATURE:

59 Partnering for a Successful Quality Program

64 Quality Tools & Training Directory

Next Month:
Quality and Safety

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Making the 'Decision' Easier

The "Decision-to-Join" study, conducted by ASAE & The Center for Association Leadership, surveyed the combined memberships of 18 organizations, including ASQ, to examine the reasons people joined—or chose not to join—their respective associations.

The survey drew nearly 17,000 responses, and the results shed new light on how association members define value.



Numerous key findings arose, including one of particular interest: Among the 756 ASQ members who took the survey, respondents identified industry magazines and journals as the top way to receive information about their profession or field (62.9%). Respondents were allowed up to three choices; association websites ranked next (54.9%), followed by e-newsletters (54.3%). (Additional results are detailed in the "Keeping Current" article on p. 12.)

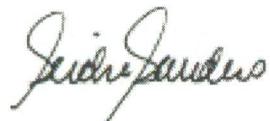
The finding bolstered support for an initiative we were already exploring: a full redesign of *Quality Progress* and its corresponding online presence.

I've alluded to the redesign in past issues and have asked for reader input via surveys and focus groups. In January, we'll unveil the newly redesigned *Quality Progress*, along with its companion website, complete with its own URL, www.qualityprogress.com.

Don't worry: The content you've always valued won't go away. Instead, we are focused on adding value by adding more content: a new department called "Expert Answers," and a number of modifications that will make your reading experience more informative and enlightening. The website upgrades will make it more interactive, searchable and engaging, with web-only features and content updates throughout the month. We hope to enhance the user experience and offer extras beyond the contents of the print version.

Right now, the editorial staff is busy toiling away to perfect nameplates and layouts, and while you'll have to wait to see the finished product, we're more than confident you'll be pleased with the results.

The *QP* staff is excited about the changes going on around us—except for one: *QP*'s assistant editor, Dave Nelsen, concludes his 5-year run with the magazine with this issue. We'll miss his thorough editing, creativity and shrewd news judgment. Thanks, Dave!



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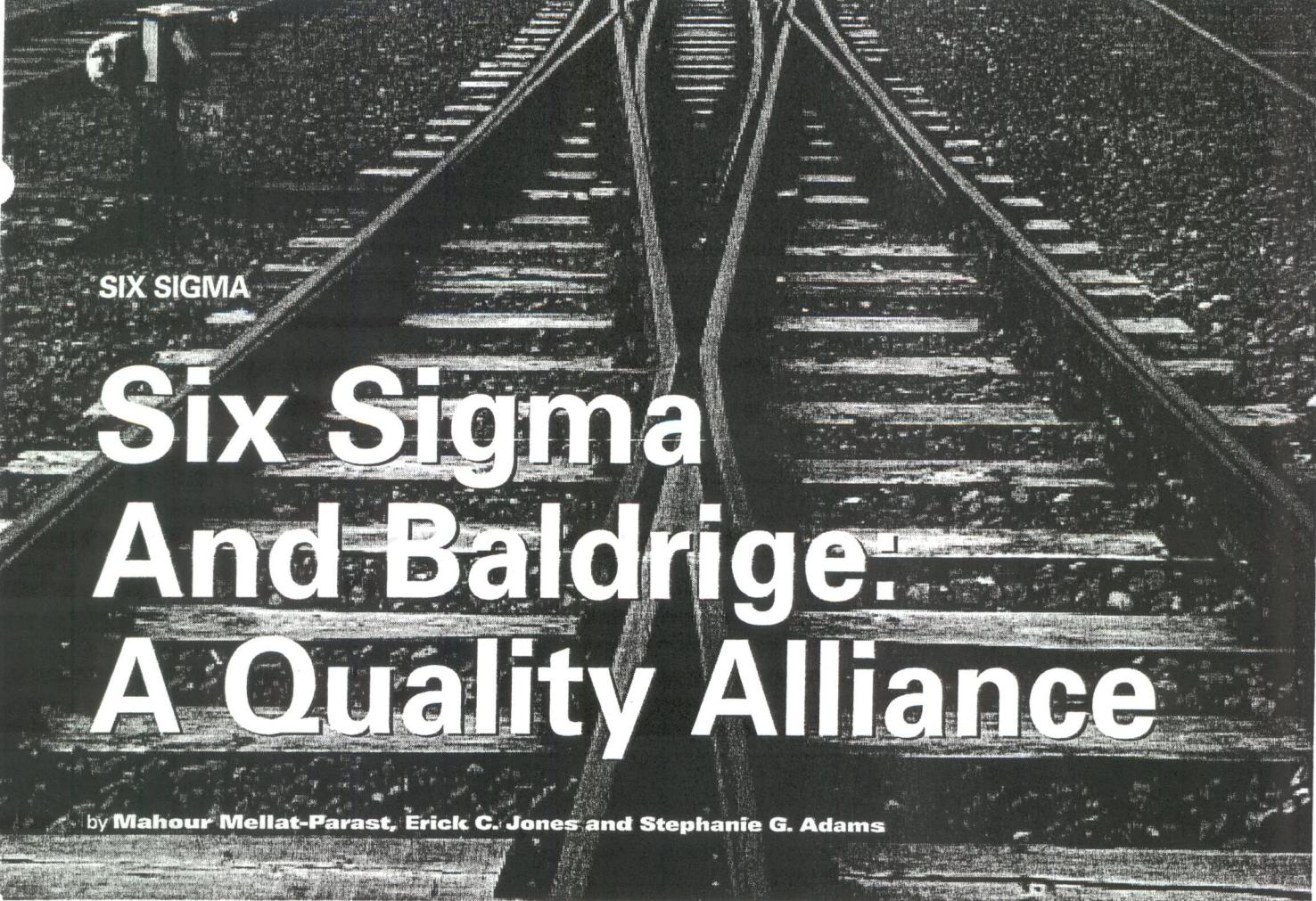
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SIX SIGMA

Six Sigma And Baldrige: A Quality Alliance

by Mahour Mellat-Parast, Erick C. Jones and Stephanie G. Adams

The Malcolm Baldrige National Quality Award has evolved from a way to recognize the best quality management practices to a comprehensive framework for world-class performance; the criteria have been widely accepted

and used as a model for process improvement.¹

Organizations strive to produce higher quality products and services and enhance profitability by implementing the Baldrige criteria. These criteria are well represented in the Six Sigma process improvement method (SSPIM).

While the Baldrige criteria and SSPIM have followed different development paths, they have similar roots. Congress established the Baldrige award in 1987 to enhance U.S. competitiveness by promoting quality awareness, to recognize quality and business excellence among U.S. companies, and to publicize the successful performance of these companies. Motorola developed SSPIM in the late 1980s as an improvement initiative focused on quality.²

Both quality activities originated from management philosophies that attempted to enhance performance, increase profitability and improve quality. It is worth investigating how the Baldrige criteria and SSPIM might relate to each other.

The Baldrige framework can be used as a generic model for process improvement in an organization. We refer to SSPIM from a management point of view—as independent projects in a firm—that focus on improving operational and business performance.³ We believe it is possible to implement

In 50 Words Or Less

- The Baldrige criteria usually address system or enterprisewide improvement, while Six Sigma attempts to produce micro-level or specific improvement.
- The Six Sigma process improvement method is a useful tool that can transform the goals of the Baldrige model into reality.
- The two models can be complementary.

SIX SIGMA

Six Sigma philosophies within the Baldrige framework and integrate them with the overall quality system of the organization.

Baldrige Model for Quality

Described as a "badge of honor"⁴ and "the most important catalyst for transforming American business,"⁵ the Baldrige award is much more than a quality award for an organization. J.M. Juran argued that it is a helpful model for achieving world-class quality.⁶

The Baldrige model consists of seven categories:

1. Leadership.
2. Strategic planning.
3. Customer/patient and market focus.
4. Measurement, analysis and knowledge management.
5. Workforce focus.
6. Process management.
7. Results.

The award is used not only as a model for quality management implementation, but also as a self-assessment tool as it provides a framework for continuous business process improvement. Figure 1 shows the Baldrige award framework. Since 1988, the framework has evolved to address the challenges of the dynamic business environment and progressed into a comprehensive, integrated

system for overall organizational performance management. It has also been used as a guideline for organizations to achieve higher levels of quality.^{7,8}

Six Sigma Method

Six Sigma is a data driven philosophy used to influence management decisions and spark action across an organization.⁹ Its proponents say Six Sigma reduces waste, increases customer satisfaction and improves processes with a considerable focus on financially measurable results.¹⁰ For the purpose of this article, we define Six Sigma as the relentless pursuit of process variation reduction and breakthrough improvements that increase customer satisfaction and impact the bottom line.¹¹

The standard framework for implementing a Six Sigma method is the define, measure, analyze, improve and control (DMAIC) process, as shown in Figure 2.

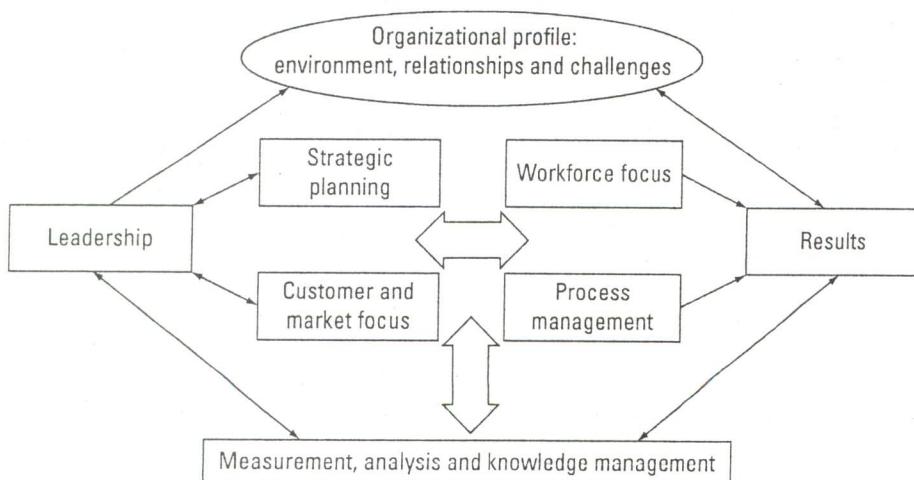
In this approach, key process input variables are narrowed to a vital few. Having control of a vital few allows for good control of the whole picture. DMAIC is widely used when a product or process already exists but performs inadequately.¹² This management strategy seeks to make an organization more effective and efficient.

DMAIC focuses on eliminating unproductive steps, developing and applying new metrics, and using technology to drive improvement.¹³ Six Sigma has a strategic component aimed at not only developing employees' commitment to it, but also actively involving a higher level of management.

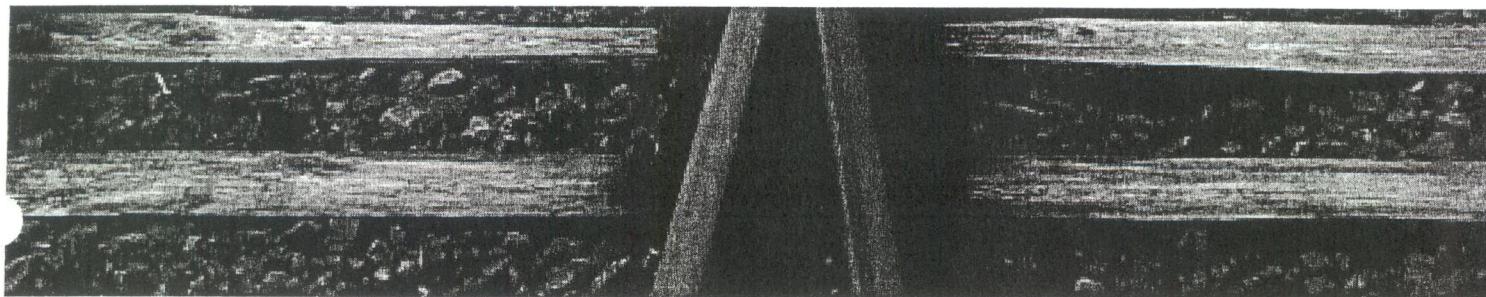
The strategic component requires management to identify key processes in its organization, to measure process effectiveness and efficiency, and to initiate improvements to the worst performing processes.

While the Baldrige model tends to address system or enterprise-wide improve-

FIGURE 1 Baldrige Criteria for Performance Excellence Framework: A Systems Perspective



Source: www.quality.nist.gov



ment, Six Sigma attempts to produce micro-level or specific improvements. Firms can achieve higher levels of performance in the Baldrige criteria by implementing Six Sigma projects in the company that focus on the key Baldrige criteria.

Baldrige Model and Six Sigma

The goal of SSPIM is to reduce variation in the product, service or process in dimensions (characteristics) essential for customer satisfaction. To do so, firms need to analyze their product, process or service and determine the variables that affect customer satisfaction. Motorola's experience with Six Sigma helped the company receive the Baldrige award in 1988. SSPIM laid the foundation for Motorola to be the first company to receive the Baldrige award, which suggests a strong link between the two.¹⁴

The advantage of the Baldrige model over other quality improvement systems (for example, total quality management or the plan-do-check-act cycle) revolves around the systems approach in the Baldrige model. The Baldrige model specifically addresses the areas companies need to concentrate on to improve their performance.

In addition, the Baldrige model is a self-assessment model. Companies can use the Baldrige model to assess their performance over time, identify strengths and weaknesses and focus on areas that need improvement. This valuable self-assessment mechanism in the Baldrige model makes it attractive to companies as a tool to improve their performance over time and continue the never-ending journey for excellence in quality.

Companies can benefit from integrating Six Sigma and Baldrige. Others have explained how Six Sigma and Baldrige are related and how "Baldrige provides the framework, Six Sigma the methodology."¹⁵ Six Sigma proponents say that winning quality awards, improving quality and increasing customer satisfaction is achieved through Six Sigma.¹⁶

While the Baldrige model is typically applied at the enterprise level, Six Sigma is deployed as a number of independent projects—throughout the enterprise. Accordingly, by implementing Six Sigma as independent projects within the Baldrige model, firms can achieve higher operational per-

FIGURE 2 DMAIC Framework



formance and efficiency through Six Sigma projects while operating under the guidelines and the framework of the Baldrige criteria.

In that regard, the two approaches are complementary. The DMAIC cycle of the SSPIM can be employed as a practical tool for addressing the requirement in each category within the Baldrige framework.

Implementing Six Sigma Within the Baldrige Model

Our approach for implementing the SSPIM within the Baldrige model is consistent with other approaches taken to relate Six Sigma with ISO 9001:2000.¹⁷ According to one approach, the implementation of the Baldrige model would mean:

- A focus on performance excellence for the entire organization in an overall management framework.
- Identifying and tracking all important organizational results: customer satisfaction, product/service, financial, human resources and organizational effectiveness.

While the Baldrige model does not provide any specific method, tool or technique that can be incorporated, it does offer general guidelines. As such, SSPIM is a practical, appropriate and useful tool that can be used to transform the goals of the Baldrige model into reality.

Accordingly, we might apply Six Sigma to improve the performance of each of the seven Baldrige categories. SSPIM serves as a mechanism to determine how much progress we have made in each Baldrige category. In this respect, while companies are using Baldrige criteria as an over-arching model for business excellence, improving the enterprise-wide quality level could be achieved through different Six Sigma projects. In other words, Six Sigma projects facilitate process improvement in a firm through focus on Baldrige criteria.

The major difference is that Six Sigma projects might not be independent; rather, they are all focused on achieving higher levels of quality set by

SIX SIGMA

the Baldrige criteria. Figure 3 shows the integration of Six Sigma into Baldrige.

In this approach, SSPIM is used to improve each Baldrige category. Depending upon the constraints or requirements of the organization, SSPIM can be implemented separately or simultaneously on each category.

The proposed idea of integrating SSPIM and Baldrige is based on the following principles:

- Six Sigma is linked with the Baldrige model. In fact, it becomes part of Baldrige—not separate from it—for achieving performance excellence. Top management sets such a performance requirement. After establishing goals—which need to be aligned with Baldrige requirements—SSPIM can be used to improve processes and meet quality objectives.
- SSPIM can be applied to all types of projects, processes and products. Top management directs the selection, administration and control mechanisms.
- The Baldrige self-assessment includes both the assessment of the seven Baldrige categories, as well as the efficiency and effectiveness of SSPIM. This approach toward quality

ensures the company is benefiting from implementing SSPIM.

- The proposed model for the integrative Six Sigma-Baldrige framework is capable of addressing the core values of the Baldrige model. Through the focus of SSPIM on management by fact (data analysis and statistics) and goal setting (focus on results), the Baldrige core values—including visionary leadership, customer driven excellence, organizational and personal learning, valuing employees and partners, agility, focus on the future, managing for innovation, social responsibility and systems perspective—can be addressed.

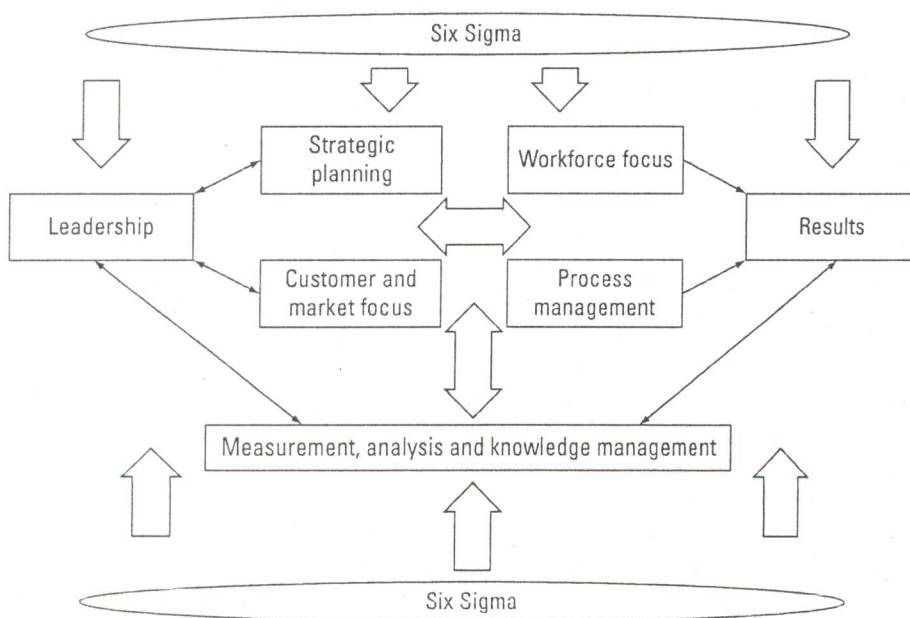
Full Integration

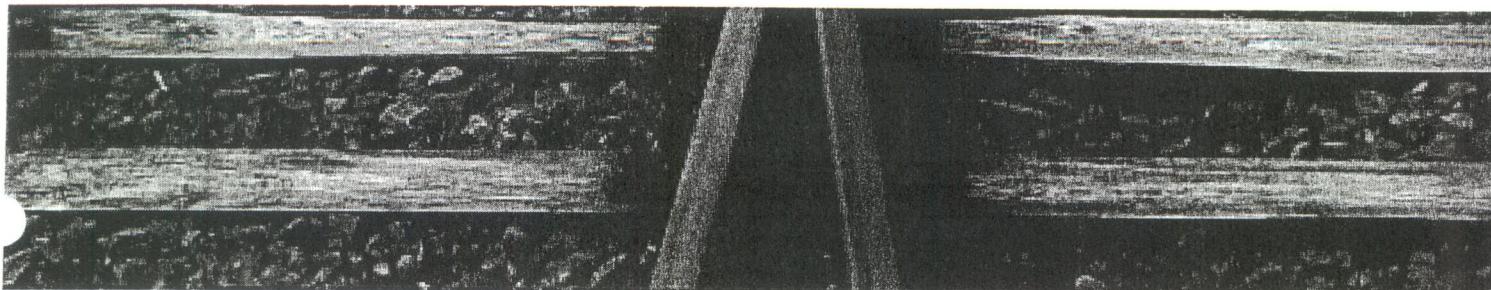
Currently, Six Sigma and Baldrige are linked, but not fully integrated. With reference to the Baldrige criteria, Six Sigma is directly related to customer focus and satisfaction, process management and information analysis, and knowledge management. The challenge is implementing Six Sigma in areas such as leadership, human resource/workforce management and strategic planning to achieve full

integration. We offer the following recommendations for full integration of Six Sigma within the Baldrige model:

Leadership: Six Sigma projects can be effectively defined to enhance the quality of the leadership in an organization. In that regard, the feedback from the Baldrige model can be used as a basis to define Six Sigma projects that focus on leadership development. Companies can assess how their leaders lead and how they should lead—both come from the Baldrige model. Then they can develop Six Sigma projects aimed at meeting the desired leadership goals. Developing leadership

FIGURE 3 An Integrative Approach to Six Sigma Implementation in the Baldrige Model





Quality After Motorola

Motorola's quality evolution shows how the integration Six Sigma and Baldrige models can be applied in a real-world setting. Motorola's success rests on integrating quality management initiatives with statistical quality control tools and techniques. Influenced by Japanese management practices at one of its previously owned plants, Quasar, Motorola's management learned how to improve the quality of its products.

Under Motorola's leadership, the plant was losing market share to foreign competitors that sold better quality products at a lower cost. In 1974, Motorola sold Quasar to a Japanese consumer electronic company, Matsushima. Under Japanese management, the factory made drastic improvements in the quality of its products. For example, the same workforce, technology and design as Motorola used at the plant was now producing TVs with 1/20th the number of defects.

After visiting the factory, Motorola's management realized that such surprising results could be achieved when an organization is focused on processes, people and quality.¹ Management realized it was the quality system that led the company to produce products of higher quality. To improve the quality of their products, company officials knew they needed to change the focus of their improvement from product attributes to operational procedures.

This shift in thinking about quality in Motorola resulted in an emphasis on the systems approach, interactions among processes within the organization and their overall impact on performance.

Such a dramatic improvement could not be achieved by just focusing on process management using statistical quality control tools and techniques. The result was improvement in all aspects of the organization, mirroring the seven categories of the Baldrige model.

By focusing on management (Baldrige's leadership category), people (human resource management), process (process management), flow of information (information, analysis and knowledge management), voice of customers (customer and market focus) and commitment to higher product quality (strategic planning), Motorola successfully reduced the defect rate in its processes to the Six Sigma level (3.4 defects per million).—M.M.-P., E.C.J. and S.G.A.

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1. ICFAI Center for Management Research, www.icmr.icfai.org/casestudies/catalogue/Operations/OPER050.htm (case sensitive).

standards can be a useful tool.

Motorola has its own "4E's + Always 1" leadership standard that addresses key leadership characteristics:

1. **Envision:** Develop vision, strategies and a viable plan to achieve them.
2. **Energize:** Create an environment for employees to excel and innovate.

3. **Edge:** Make tough, effective and timely decisions.

4. **Execute:** Achieve results in a timely manner.

5. **Ethics and character:** Conduct business practices professionally and ethically.

Companies that do not integrate their leadership with Six Sigma projects can fall short in achieving the desired outcomes of those projects.¹⁸

Human resource/workforce management: Feedback from the Baldrige self-assessment can be used to identify potential Six Sigma projects focusing specifically on human resource development. In addition, SSPIM enhances the organizational knowledge base through training and systematic learning. But the impact of SSPIM on human resource development goes beyond that.

"There are hundreds of human resource issues that should be addressed when you begin Six Sigma," says David Silverstein, CEO and president of Breakthrough Management Group, a Six Sigma consulting firm based in Longmont, CO. This includes developing a Six Sigma training delivery plan, preparing human resource teams for their role in Six Sigma, and creating and implementing a communication strategy to keep the organization informed about Six Sigma achievements.

"The human resource team controls the history and the culture of the company," Silverstein says. "(The team is) a vital part of the system that supports Six Sigma."¹⁹

Strategic planning: Honeywell was another company that successfully implemented SSPIM in the entire organization. Honeywell developed a new generation of the Six Sigma approach called Six Sigma Plus. This initiative was primarily a quality strategy developed through the merger of Allied Signal and Honeywell in 1999.²⁰

With Six Sigma Plus, Honeywell focused on key strategic objectives: providing more value to its customer by empowering the employees, improving its processes, products and services, and capitalizing on e-business. In fact, Honeywell's Six Sigma Plus program focused on implementing high impact projects consistent with its strategic planning. It employed rigorous project selection processes in line with the company's overall strategic plan.

A Quality Alliance

Organizations try to implement the Baldrige model as a means for achieving business excellence. The seven Baldrige categories are integrated and related with the purpose of addressing business challenges so companies can be competitive in a dynamic business environment. However, the Baldrige model does not provide any tools or techniques that can be used by the firm for achieving

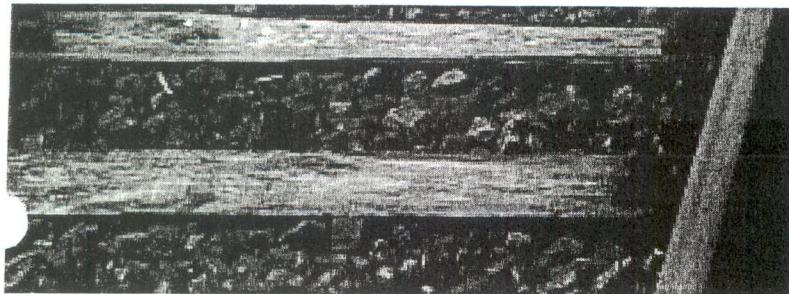
desired performance and quality objectives.

Six Sigma is a practical method for reducing cost, improving quality and fostering continuous improvement in the product or process. It has been widely used by companies looking to achieve higher levels of customer satisfaction and profitability. Six Sigma's acceptance by many companies, its ability to produce bottom-line savings, and its foundations in quality make it a strong addition to the Baldrige model.

Integrating SSPIM into the Baldrige model not only helps firms achieve higher levels of performance and customer satisfaction in each Baldrige category, it also provides firms with a useful method for pursuing quality and a performance level set by the Baldrige model.

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SOFTWARE REVIEW

Quality Companion 2 by Minitab™

Streamlining your Six Sigma projects

Quality Companion 2 streamlines project workflow and makes Six Sigma projects easier to plan, implement, and present. It is the only package that combines the three elements essential to success—organization, practical tools, and expert guidance.



QUALITY ANALYSTS, ANALYSTS

Quality Companion supports every Belt and Champion on your team. Its suite of linked tools automates tasks, helps you track, complete, and report on the myriad of necessary steps, and archives all project information in one location.

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SOFTWARE REVIEW

S.M.A.R.T. Supply

System Monitoring
Always Real Time



UNITING YOU & YOUR INFORMATION

Supplier of S.M.A.R.T.

A business e-tool used for monitoring suppliers' performance and communicating relevant data. The tool enables the customer to provide suppliers with all relevant information necessary for the supplier to understand; and therefore meet prescribed targets (e.g. PPM parts per million defects, costs of quality, delivery, pricing needs). This tool gives the customer the ability to communicate to its suppliers online and in real time, eliminating the need for paper and redundant data entry.

Jade Innovations

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