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Engineering Value Into Enterprise Risk Management; Six Sigma Techniques Can Improve the Quality of ERM Processes and Enable Organizations to Manage Risks More Successfully

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Engineering Value Into Enterprise Risk Management

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Six Sigma techniques can improve the quality of ERM processes and enable organizations to manage risks more successfully.

ORGANIZATIONS SHOULD NOT ONLY RECOGNIZE AND MINIMIZE TRADITIONAL DOWNSIDE RISKS, but also embrace upside risks, or opportunities, as a strategy for success. According to a 2005 survey by management consulting firm Booz Allen, 87 percent of the market value lost by large companies with market capitalizations over US $1 billion was the result of strategic and operational blunders. Compliance failure, typically the focus of downside risk, destroyed only 13 percent of market value during the five-year study.

Faced with this counter-intuitive finding, companies may wish to pursue a more balanced and positive approach to

risk management. Enterprise risk management (ERM) goes beyond mere risk mitigation and compliance — it requires a deep appreciation of upside risks, as well. Building a solid ERM infrastructure is a tall order that calls for leaders and managers skilled in understanding, synthesizing, and presenting information across the organization.

Internal auditors can help their organization improve its risk management and control systems by viewing ERM through the lens of Six Sigma, a business and quality management strategy adopted by many large organizations (see "Six Sigma Explained" on this page). Six Sigma is a scientific, data-driven, project-based business improvement methodology that uses processes as enablers to achieve business results. By combining the process discipline of Six Sigma with The Committee of Sponsoring Organizations of the Treadway Commission's (COSO's) *Enterprise Risk Management–Integrated Framework,* internal auditors can help their organization establish a proactive approach to addressing both upside and downside risks and creating stakeholder value.

ERM AND SIX SIGMA

Standard 1120 of The IIA's *International Standards for the Professional Practice of Internal Auditing* states that "the internal audit activity should assist the organization by identifying and evaluating significant exposures to risk and contributing to the improvement of risk management and control systems." One way internal auditors can fulfill this directive is by assuming the role of matchmaker to marry ERM initiatives with Six Sigma in their organization.

ERM and Six Sigma share some common goals and principles. Both are focused on delivering value to stakeholders, such as investors, businesses, customers, employees, and society. Both rely heavily on business processes and data integrity. Moreover, both deal head-on with risk and uncertainty, but from different perspectives — ERM from a financial reporting viewpoint and Six Sigma from an operations and production viewpoint.

One important difference between the two disciplines, though, is that ERM typically does not try to determine whether the organization's ERM process is improving over time — a key Six Sigma principle. According to COSO, a robust design and implementation of ERM correlates with effective governance and accountability. However, implementing ERM is a large-scale, long-term undertaking, involving all levels of personnel within an organization. In this sense, Six Sigma may provide a "meta-process" of scientifically proven tools that can be used to implement and measure the effectiveness and improvement of ERM. Internal auditors can play a "cultural translator" role in this process, bridging the gap between the two traditionally separate worlds of operations and financial reporting. Six Sigma's structure, statistical methods, and deployment readiness can enable and enhance the application and effectiveness of ERM in three key areas: skilled employees, implementation tools, and value creation.

SKILLED EMPLOYEES

An organization that already has implemented Six Sigma has a great head start in establishing ERM. As a shared service to most businesses, Six Sigma, or process excellence departments, have missions to supply skilled people for business improvement projects throughout their organization. Project managers who are Six Sigma Black Belts receive four weeks of training in team tools, process tools, and statistical methods and thinking, while Green Belts receive two weeks of training. Six Sigma programs also generally have their own steering committees, in which project opportunities are prioritized and resources are allocated. ERM projects can benefit from these resources, and ongoing risk management concerns can be addressed on a consultative basis.

Dominion, a gas and electric energy company based in Richmond, Va., was the first company in its industry to implement Six Sigma enterprisewide, beginning in 2000. The company hired retired Admiral Jay Johnson, former U.S. Chief of Naval Operations, as senior vice president–business excellence and

Six Sigma Explained

Six Sigma gets many of its operational principles and tools from the quality movement. Originating at Motorola in the early 1980s and expanded by General Electric in the 1990s, modern Six Sigma initiatives incorporate management principles and a formal program and project structure. At its inception, Six Sigma was mostly about reducing the amount of "defects" in manufacturing processes. However, Six Sigma is applied today to do much more. It encompasses a broader definition of *defect* — for example, an invoice not paid within 30 days could be considered a defect — and its techniques extend into proactive and retrospective prediction. Because risks are, in effect, "defects waiting to happen," Six Sigma techniques can be used to reduce, mitigate, transfer, or eliminate them.

Key Six Sigma principles include:

- *Relevance and value to customers.*
- *Enabling data-driven decisions.*
- *Understanding how outcomes are related to key outputs and how inputs and key outputs are related to each other (e.g., input-output ratio analysis).*
- *Eliminating waste of action and inaction.*
- *Working in a team environment across traditional department silos.*
- *Financial accountability of projects.*

A central aspect of Six Sigma is its specific problem-solving process: define, measure, analyze, improve, and control (DMAIC). DMAIC is a process that guides a specific project team to improve its process using a rigorous, scientific method. For example, analysis begins only after a baseline for performance is established, solutions can't be implemented until their efficacy is clear, and standardization only takes place after process changes have been demonstrated to work. Six Sigma also uses a large number of statistical, team-oriented, and process-related tools. Six Sigma projects and programs are incremental in nature and, therefore, primarily provide evolutionary, rather than revolutionary, improvement to a business.

put him in charge of Six Sigma deployment. Johnson built a team of more than 100 Six Sigma Black Belts that identified areas where the company could improve the efficiency of processes and lower operating costs.

In organizations that have not implemented Six Sigma, internal auditors can introduce the concept, its tool set, and how the discipline can help define, control, and improve processes, including risk management. Auditors also can use Six Sigma techniques to help their organizations assess risks facing all systems and processes.

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IMPLEMENTATION TOOLS

Knowledgeable internal auditors can help their organization identify experts to implement a variety of Six Sigma tools to manage risk. Failure modes and effects analysis (FMEA) is a prioritization tool that scores potential product, people, or process risks along three dimensions: likelihood, severity, and possibility of detection. FMEA can be used to quantify traditionally hard-to-measure, qualitative concepts such as risk appetite and risk tolerance. For example, Bank of America uses FMEA to identify all operational risks that would affect its core processes and then links each risk with quality, completion time, and cost metrics. FMEA has the potential to be a breakthrough tool for coping with the chronic challenge of assessing, aggregating, and responding to quantitative and qualitative risk factors.

Six Sigma also offers an array of tools applicable to the eight components specified in COSO's ERM framework — internal environment, objective setting, event identification, risk assessment, risk response, control activities, information and communication, and monitoring — such as:

- Data collection plans, statistical sampling, check sheets, and measurement systems analyses to ensure data correctness and relevancy.
- Statistical process control (SPC) to provide monitoring, trend spotting, and decision support.
- Visual techniques, such as flowcharts, to provide transparency to processes.
- Tools that help pinpoint the source of a problem to assist in determining cause-and-effect patterns that can be used to anticipate and prevent future anomalies.

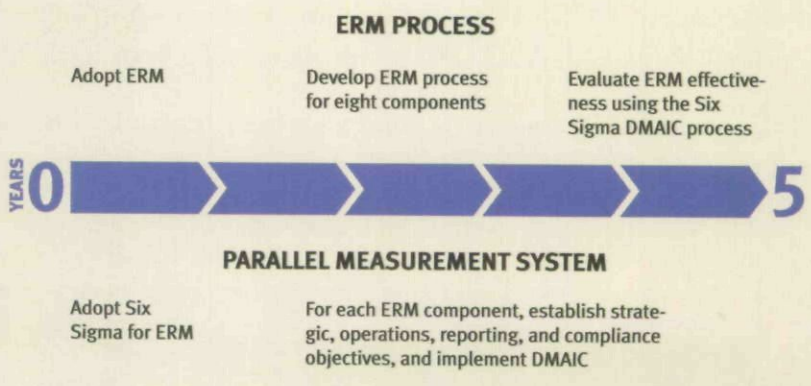
SPC provides a good example of how these tools work. Organizations that have adopted Six Sigma or other performance excellence programs rely on the correct application of SPC to business processes to answer two critical questions about meeting customer requirements: Can we do it right? Are we doing it right? SPC uses tools like control charts to view all critical data simultaneously and direct the organization when to react and when not to react to changing risks and environments.

Another significant Six Sigma-driven application would be devising a capability maturity model framework to track the effectiveness of ERM implementation and sophistication over time. "Evaluating ERM With Six Sigma," on this page, shows that in addition to implementing an ERM process, the organization could simultaneously establish a measurement system for each ERM component based on Six Sigma principles and tools. The Six Sigma application would evaluate whether ERM processes are getting better progressively over time or changes need to be made.

Contrary to popular belief, Six Sigma is not limited to only objective tasks. Six Sigma tools can be used no matter what the business process is, although it may require a bit of creativity. Six Sigma has been used successfully to improve

Evaluating ERM With Six Sigma

This chart illustrates the parallel processes involved in adopting enterprise risk management (ERM) and Six Sigma simultaneously. The organization establishes ERM in Year 0 and develops processes for each of the ERM components over the next five years. At the same time, the organization adopts Six Sigma methodologies, including the DMAIC problem-solving process, for each ERM component. By Year 5, the organization should use Six Sigma to evaluate and continuously monitor the effectiveness of ERM, making changes as necessary.



more subjective processes. For example, General Electric uses Six Sigma in its legal department to limit the number of signatures needed per document. This change not only increased throughput and efficiency, but also reduced costs and improved relationships with external parties due to faster response times.

VALUE CREATION

Internal auditors with a sound appreciation for the potential of Six Sigma technology also can use it to unleash the value side of ERM through a disciplined, systematic means of keeping track of upside and downside risk, giving a more balanced application of ERM. In addition to strengthening risk assessment processes overall, all Six Sigma project teams must consider the voice of the customer (VOC). Tools and steps used early in any Six Sigma project force the team to make sure its processes and metrics have direct relevance to customers and make sense from a global perspective of the organization.

One tool that can create value is a Suppliers, Inputs, Process, Outputs, and Customers (SIPOC) map, a relational map that clearly illustrates input-output linkages as well as the impact on customer outcomes (see "SIPOC Map" on this page). A SIPOC view coupled with VOC analysis often brings into focus not only the challenges related to defects in customer outcomes, but also potential opportunities to create value in the marketplace. This has significant implications for customer relationship management and can help organizations move up the value chain. For example, BJC Healthcare, a large nonprofit U.S. health-care organization, used a SIPOC view to understand who its customers are and "to listen to their voice" so the organization could improve customer satisfaction, helping the company build an expected 10-year net present value of US $87 million, according to a presentation at the 2007 American Society for Quality World Conference on Quality and Improvement in Orlando, Fla.

Internal auditors also should be aware that Six Sigma can help organizations meet the COSO ERM requirement to consider tolerance levels related to all possible outcomes, including customer service, reputation, and other qualitative areas. To measure the organization's risk tolerance, auditors can assemble Six Sigma professionals with expertise in dealing with qualitative judgments and using

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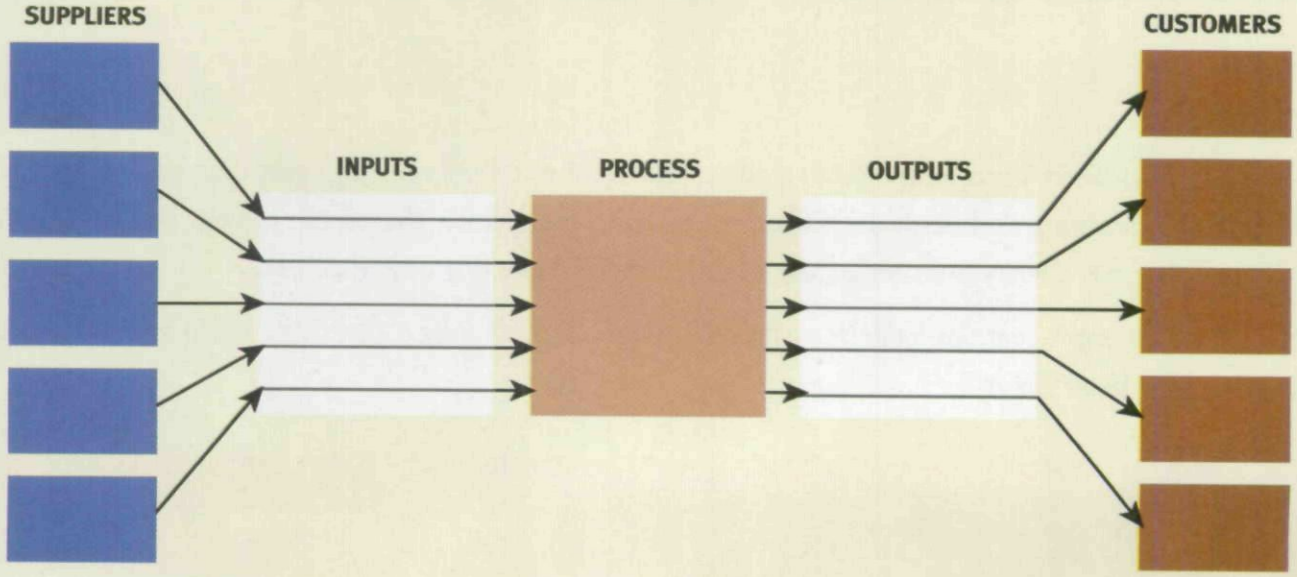
SIPOC Map

Creating a Suppliers, Inputs, Process, Outputs, and Customers (SIPOC) map is one of the first things a Six Sigma team does on a project. This map enables the team to see how "what we do" (process) relates to "what we produce" (outputs) and "who we produce it for" (customers). It also brings "what we need" (inputs) and "where we get what we need" (suppliers) into focus. In doing so, a SIPOC map helps teams make better decisions by enabling them to see beyond "what they do" and to consider and balance a wider variety of reasons why their process is experiencing difficulties and is replete with risks.



methods like VOC analysis to bring analysis of such risk outcomes into the realm of measurement.

In organizations with an active Six Sigma program, internal auditors can help coordinate available people and tools to deploy ERM more effectively. A key goal of many Six Sigma projects is to transfer management of a process from output to input. This enables organizations to obtain better business and customer outcomes through control mechanisms that are known to work in practice, not just in theory. In the parlance of ERM, management can use leading indicators to control risks in operations more effectively. Internal auditors can play a valuable intermediary role in embedding Six Sigma processes into control self-assessment (CSA) efforts, making risk and control mapping exercises — including monitoring — highly relevant, reliable, useful, and timely. Specifically, as part of the ERM process, auditors can help ensure that the appropriate risk tone is set in the control environment. To carry this risk tone throughout the organization, they can facilitate departmental CSAs to identify risks and establish appropriate risk responses. Moreover, to make the risk management process more effective, internal auditors who are well-versed with Six Sigma can introduce these concepts across departments, facilitate education and awareness building, integrate them with CSA processes, and ensure they are applied to ERM efforts appropriately.

Once auditors understand the versatility and usefulness of Six Sigma solutions, they can help their organization match the appropriate Six Sigma approach to an existing risk problem.

MAKING THE MATCH

In many ways, Six Sigma represents a solution in search of relevant problems. Internal auditors are keenly aware of difficult measurement challenges and unsolved problems that currently exist in their respective organizations. Once auditors understand the versatility and usefulness of Six Sigma solutions, they can help their organizations match the appropriate Six Sigma approach to an existing risk problem. Thus, internal auditors can act as facilitators to bring new solutions to long-standing risk management problems, including formidable measurement challenges.

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