# SIX SIGMA PROJECT MANAGEMENT METHODOLOGY pdf

## 1: Six Sigma in Project Management - Definition, Cycle, Success Factors

*PMBoK Execution Process - Six Sigma can complement product project execution primarily in the areas of risk management and in optimization through application of tools such as design of experiments, which can be used to find "what's best" solutions.*

A methodology is a framework of processes, methods, and practices that project managers employ for the design, planning, implementation and achievement of their project objectives. All project managers need to continuously drive their projects in the right direction, and a project methodology helps them to work in an organized manner. A critical task for any project manager involves getting their team organized around a project. This is where a project management methodology comes to the rescue, helping managers organize their project into a smooth, structured process. Project management experts around the world agree that all projects stand to benefit from implementing a recognized methodology. Waterfall is the default, sequential project management process that most teams adopt by default. Think of a waterfall: The way a stream of water runs down from the top and flows down to the bottom without ever diverting away from the main course. The waterfall methodology works similarly. It requires upfront planning, which is then followed by a sequential execution of the plan. Each stage of the project flows from the top to the bottom, requiring teams to work through the tasks in sequence, completing one task before moving on to the next, all the way to project completion. There are clearly defined goals and a set timeline for project delivery. Pros of the Waterfall Method: Extensive up-front project planning and dependencies tracking go into this approach, and this approach often results in more accurate timelines and budgets. Also, transferring project knowledge is easier as extensive documentation is created in tandem with the development. Cons of the Waterfall Method: Adaptive Project Framework APF The Adaptive Project Framework method is designed to continuously adapt to the changing situation of a project and incorporates learning from experience. The fundamental concept behind the APF is that scope is variable, and within specified time and budget constraints, APF strives to maximize business value by adjusting scope after every iteration. This is typically achieved by making sure that the client remains the central figure in deciding the maximum business value. At the completion each iteration, the client can alter the change project scope based on learnings from all previous iterations so the teams are able to create the most business value. Pros of the APF Methodology: Cons of the APF Methodology: Agile Methodology While Waterfall happens to be the most widely deployed project management framework, Agile is fast catching up and proving to be a vital tool in the arsenal of most modern project managers despite it being introduced only 16 years ago. While Agile was designed with the software and IT industry in mind, it has become highly relevant to many other industries around the world. The Agile is an iterative and incremental framework that uses short development cycles called sprints to focus on continuous improvement in the development of a product or service. A sprint is a specific amount of time allocated for a particular task within a project. Sprints are deemed to be complete when this time period expires. Here the planning begins with the clients loosely describing how the end product will be used, its uses, and so on, so the project management team gets a good understanding of the expectations. Once the project commences, teams iterate cycle through a process of planning, execution, and evaluation, during which the final outcome may change. Continuous collaboration between team members and with the client to make fully-informed decisions is the key philosophy here. Pros of the Agile Framework: This approach is beneficial for projects with flexible goals that can undergo scope changes midway. Cons of the Agile Framework: Project deadlines and costs are hard to communicate, and all stakeholders must take time out to be actively involved with the day-to-day progress. Not sure which one to choose between the APF and Agile frameworks? Here are some distinctions between the two: With APF, your end goals are clearly defined but the method for achieving those goals will change based on your experience at each stage of the project. With Agile, on the other hand, your end goals are only loosely defined. Six Sigma Originally developed by Motorola, Six Sigma is a project management methodology that is primarily driven by data. It is a statistics-based quality improvement process with a primary aim of reducing the number of bugs in software development , or defects

in the manufacturing and industrial sectors. It really can work in any industry and in any type of business because everywhere we have a process, we can study it, measure it, and try to make it better. Also, Six Sigma requires accreditation via exams. Lean Six Sigma This is a new framework combining the efficiency of the Lean methodology along with the statistics-based process improvement workflow of Six Sigma. It relies on team collaboration to systematically improve performance by removing waste and reducing variation. Lean Six Sigma methodology allows you to understand how work gets done and identify which aspects of your project are most valuable to the client or customer, thereby increasing efficiency. Pros of the Lean Six Sigma Methodology Besides helping your projects get more efficient and cost effective, Lean Six Sigma keeps employees actively engaged in process improvement, helping them feel accountable. It delivers a sense of ownership to all stakeholders involved in the project. Cons of the Lean Six Sigma Methodology The framework typically involves major modifications to the tasks are completed, so all stakeholders need to be prepared for the amount of time, effort, and resources needed to accomplish the projects. The methodology was developed by GPM Global with an aim to create a framework that took environmental factors into account. Like Six Sigma, PRiSM also requires project managers to gain accreditation, ensuring the methodology is administered properly and retains its value. The company needs to be on board at all levels with sustainable principles, or the methodology will fail to deliver. PRINCE2 requires dividing projects into multiple stages, each with their own strategies and processes to follow and is heavily documented. A project manager requires a thorough knowledge of this complex methodology to understand if it will scale properly for a particular project, but luckily PRINCE2 requires accreditation in order to become a facilitator. Cons of the PRINCE2 Methodology Because a lot of effort goes into creating and maintaining documents and logs at each stage of the process, making any project changes is quite cumbersome. Scrum Named after the rugby play, Scrum is an Agile framework for completing complex projects that require adapting to quickly shifting requirements. Scrum was originally designed with software development projects in mind, but over time it has shown to work well for any complex, innovative scope of work. Scrum focuses on short, sharp delivery of projects - allowing time for quick feedback and speedy response to scope changes. With this product management methodology, a huge emphasis is put on team dynamics and collaboration; teams typically come together to work in a series of two-week sprints, facilitated by a scrum master, whose job is to remove any barriers to team progress. Scrum requires that all team members are in constant communication through daily scrum meetings. On the other hand, chickens may be involved in the task as well, but are not ultimately responsible. At the end of every Sprint, the team must have a usable product. Pros of the Scrum Framework Scrum is one of those iterative methodologies where new developments can be tested quickly and any mistakes can be fixed right away. Cons of the Scrum Framework Scope-creep is a major issue in Scrum projects, and because it relies on tight team collaboration, any member leaving can disrupt the whole project. Conclusion Managing a team to successfully deliver a project is not a simple task. We have briefly introduced a few different project management methodologies in this article, but deciding the one that is right for your project or company will depend several factors as well as on how you want to structure your projects. What you can be certain of, however, is that there is a methodology out there to help you survive the fast-paced, constantly changing, high-quality demands of the new business model. Let us know which project management methodology has worked for you. Apart from donning the hat of an esteemed position with accompanying responsibilities and duties, he believes in living life to the fullest. A mellifluous voice, passionate cricket enthusiast, avid photographer are a few things that describe him. Owing to his passion for new ventures in the world of technology, latest trends, close monitoring of technical processes, he writes to inform and educate. His works have been published in various top-notch sites all over the world. Sharing of new ideas and finding innovative ways to implement them is his general motto and driving factor in life.

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## 2: Six Sigma - Wikipedia

*In case your business school notes on Six Sigma have (understandably) blurred over the years, Six Sigma is a methodology used to find and address the weak points in a process that hinder efficiency or that result in more errors than is ideal.*

Integrating Project Management into a Six Sigma System Integrating Project Management into a Six Sigma System Daniel Zucker 3 Manufacturers and transactional firms share a drive to lower costs, reduce cycle time and offer a diverse product mix as they pursue higher profits and an increased market share in a growing global environment. Consumers those paying for the end product want products or services that are cheaper, readily available and of a quality that meets their expectations. They also require an ongoing portfolio of projects aimed at creating revenue or reducing costs. While not all organizations implement these systems or keep them in their original form, many of the core ideas are adopted. Some organizations have integrated two or more systems. One melding of systems that holds significant promise is the integration of the Six Sigma methodology with the tools and processes of project management. Six Sigma uses tools designed to identify root causes for the defects in processes that keep an organization from providing its customers with the consitent quality of products the customers require on time and at the most reasonable cost. The Six Sigma work is normally done through cross-function teams that manage the project. Yet the methodology does not address the management of the project itself. There is an assortment of tools that are used throughout the project to manage the project to completion. The Six Sigma toolkit includes a variety of techniques, primarily from statistical data analysis and quality improvement. While the methodology of Six Sigma has proven effective in troubleshooting or improving existing processes using the DMAIC approach, there are challenges to confront when using Six Sigma. A company that relies solely on Six Sigma to run its projects may experience issues with control of the project process. A Master Black Belt was interviewed from a firm that utilized a pure Six Sigma system for its projects. The firm found that the majority of its projects were not being completed as the Six Sigma system would suggest. A lack of management support, insufficient resources and failure to understand the voice of customer VOC were some of the reported problems. The DMAIC approach focuses on controls for the improvements to the process, not the control of the project management process. Work breakdown analysis, schedule development, risk analysis, scope definition , status reporting and cost budgeting are common processes that project managers use to plan, execute, control and close projects. These processes and associated tools work for both transactional projects and manufacturing projects. The project management approach utilizes various tools and processes to complete a process improvement project. The processes identified above are far from an exhaustive list of the processes available in the project management arsenal, but represent those most useful to a process improvement project. The strengths of project management include formal control of change, scope, time and money. These controls are important to any firm trying to improve its bottom line via process improvements. The Integration of the Two Approaches By taking the process control strength of project management and combining it with the troubleshooting strength of Six Sigma, an organization can create a consistent, controlled and predictable process troubleshooting system. The integration can begin with the development of a project life cycle. Implementing the Six Sigma methodology for defining the problem adds statistical knowledge of the problem, reducing the chance of an incorrect assessment of the issue as defined by the customer and scope documents. Using Six Sigma tools will reduce the bias that influences perceptions about a particular problem. The tools of both project management and Six Sigma can be placed in this life cycle to plan, act, do and check for a process improvement project. An example of a project life cycle is shown in the table below. This life cycle shows DMAIC activities in red assigned to project management phases and controlled by decision points at the bottom of each column.

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## 3: Introduction to Project Management Methodologies and Their Pros and Cons

*Six Sigma makes a long-term commitment to a process, and it requires commitment from the project teams that practice it. This commitment begins when the team works together to write a charter that defines the objective of the project.*

Timelines Estimated benefits This charter gives an overview of a six sigma project and is approved by top management to give a go-ahead to six sigma project. Measure Process variables are measured at this stage. Process data is collected. The baseline is obtained and metrics are compared with final performance metrics. Process capability is obtained. Analyse Root cause analysis is done at this stage. Complex analysis tools are utilized to identify the root causes of a defect. Tools like histograms, Pareto charts, fishbone diagrams are used to identify the root causes. Improve Once final root causes are identified, solutions need to be formed to improve the process. Steps to identify, test and implement the solutions to eliminate root causes are part of this stage. Simulation studies, Design of experiments, Prototyping are some of the techniques used here to improve and maximize process performance. Control After implementing the solutions, the performance of the solutions must be recorded. A control system must be in place to monitor the performance post improvement. And a response plan is developed to handle solution failure. Control charts show the process performance. Project benefits are discussed and verified against estimated one. The main purpose of this phase is to ensure holding the gains. Defining Lean Six Sigma: It drives customer satisfaction and bottom-line results by reducing variation, waste, and cycle time, while promoting the use of work standardization and flow, thereby creating a competitive advantage. It applies anywhere variation and waste exist, and every employee should be involved. Lean principles help to reduce or eliminate process wastes. Six Sigma focuses on variation - reduction in process. Thereby, the principles of Lean Six Sigma help to improve the efficiency and quality of the process. Lean or six sigma approach in this dynamic environment cannot bring full potential to improvements if applied in isolation. In this management approach, traditionally the lean methodology is used first to remove the waste in a process. Later, the Six Sigma tools are used to improve process variations. The ultimate objective is to improve processes by reducing variation and eliminating waste. The extent of approaches may differ depending upon process complexities or improvement sought. It improves bottom-line profits and helps meeting business goals. The integrated Lean Six Sigma management approach is being used across sectors and industries. Lean Six Sigma leads to enjoying competitive advantages in various companies in the world. They can be a product or service-oriented companies. The LSS methodology improves processes and makes them efficient. The key to success is management support, employee engagement and commitment to improving customer satisfaction. In a nutshell, Lean methodology aims at waste reduction in process, while six sigma aims at reduction of process variation. However, both the approaches go hand in hand to realize the full potential of process improvements. An integrated approach of lean six sigma helps improving process efficiency, optimizing resources and increasing customer satisfaction, while improving profits and curtailing cost. Hope, now you understand the differences between these three management approaches. They have their benefits when applied to different business processes. They improve the quality of existing processes and make you a better manager. Become a Lean expert Now! Also, he is a vivid technical writer in the Project Management and Quality Management domains.

# SIX SIGMA PROJECT MANAGEMENT METHODOLOGY pdf

## 4: Six Sigma Methodology | ActiveCollab Blog

*Integrating Six Sigma techniques with the project management methodologies is the way to go for companies focussing on continuous improvement. Many organizations implement Total Quality Management, Six Sigma, and Total Quality Control to assist in new product development, to reduce the cost of development, improve manufacturing efficiency or to.*

By Mike Russell â€" October 1, Posted in: I know, I know. The first blush of the definition of Lean Six Sigma is that PMBOK would not define it as falling within the confines of project management because it is focused on the existing procedures within a company. But we are going to talk about it anyways because it is being used by project managers to improve their effectiveness in a variety of settings. Instead of debating the viability of Lean Six Sigma as a project management methodology, I am going to give you a crash course on its approach and benefits. This methodology focuses on improving three factors: You can see where this would be a beneficial approach to a consumer-based organization. LSS identifies seven types of waste that exist in any organization: In an IT setting, you could modify the words slightly and still cover all seven areas. Really, in most organizations I think you could look at your operation and see all these types of waste. While different in a manufacturing or consumer products company, in my group it comes down to people waiting for work to do. It stands for the following: You need to describe the problem in quantifiable terms and identify the process to determine how performance will be measured. This is a data drive process, so you use quantifiable metrics to understand the current performance and where you can make improvements. Through your research, you identify the root cause of the problem. Identify and implement the best strategies that will address the root causes identified in the previous step. Identify and implement sustainment strategies that ensure process performance maintains the improved state. A discussion of each step could fill pages and pages of this blog, but I am going to keep this article short and discuss only one: In future articles I will talk about the remaining four steps in the process. As part of LSS, Define includes what you would expect: Identify the problem and the underlying process to be improved. Understand the customer, their needs, and requirements. Quantify the performance gap and its impact. Define the performance standard or measures. Set project success criteria. Ensure sponsorship and resources are in place. All of these steps are extremely important to the success of your project. Like I have said in other articles related to planning and onboarding, it is imperative that you take the right amount of time that is required to be very thorough and clearly answer all questions as part of this step. Without a clearly defined methodology to collect measurable data, for example, you would go into this process literally blind. As part of this step, you have six deliverables that you will be able to put your hands on before you move on to the nest step. I feel as a project manager that even if you do not use this methodology, you should be aware of it and know how to apply it. Several years ago we used it within our company to improve the quality of customer care that we provide clients. The processes it put into place then are still being used today. Take the time to educate yourself and see if it could benefit your company and improve the way you do business.

# SIX SIGMA PROJECT MANAGEMENT METHODOLOGY pdf

## 5: About Six Sigma | Six Sigma Methodology | Six sigma Training and Certification

*Applications of Six Sigma in project management include effective management of Six Sigma projects, as well as using the disciplined Six Sigma method in managing projects in organizations. This important topic has not yet received the attention it deserves in project management conferences and publications.*

The PMBoK is a well-established standard promulgated by the Project Management Institute that is widely used by professional project managers in many industries around the world, and is the basis for certification as a project management professional PMP. As specific connections are explored, it is useful to identify and comment on several different perspectives from which this topic can be considered. This is not asked in the rhetorical or definitional sense. What Is a Project? A DFSS Design for Six Sigma project could be chartered to better understand the requirements of a certain customer segment, with the intent to deliver that knowledge to the product project team at the appropriate time. Similarly, a process improvement DMAIC project might be initiated if it were recognized that testing capability was insufficient to deliver the required level of quality within the required time frame. Both Six Sigma projects could have results that impact other product project teams as well, and so are not merely tasks within the product project, but have a life of their own. It is generally accepted as best to keep Six Sigma projects time limited typically four months or so and to execute them with small teams. Six Sigma practitioners may resist additional oversight from a project office or other manifestations of professional project management. With large projects, individual results goals may not provide adequate control to ensure desired outcomes and accountability. It is not intended to suggest it does not apply to smaller efforts, or that all of the generalizations associated with larger projects will apply in smaller efforts. In short, where it is well established that professional project management adds value to larger projects, it is not clear that the same is true for typically smaller Six Sigma projects. When Six Sigma projects truly follow the Six Sigma roadmap and faithfully conduct tollgate reviews, the additional overhead associated with project office controls and reviews may not be justified. Both disciplines do share many common goals and intent. Both seek to reduce failures, prevent defects, control costs and schedules, and manage risk. Generally speaking, professional project management attempts to achieve these goals by encouraging sound practices on a project-by-project basis, often through the mechanism of a project office that promulgates policy, provides templates and advice, promotes appropriate use of tools such as critical path method, and perhaps performs periodic project reviews. Six Sigma is more typically oriented toward solution of problems at root cause and prevention of their recurrence, as opposed to attempting to control potential causes of failure on a project-by-project basis. Recognizing that project management is itself a process, Six Sigma is potentially applicable to its improvement. Both sets of practices bring value and are best applied in conjunction with one another. This first phase or process includes preparation of a project charter and assignment of a project manager. The PMBoK areas most closely related and the most prevalent Six Sigma connections to each may be summarized as follows: Six Sigma brings tools such as analytical hierarchy process, conjoint analysis and concept selection scorecards that promote fact-based conversations between the project team and the customer. Six Sigma tools such as combinatorial methods and Markov chains can be applied to improvement of testing processes. Risk Management â€” Six Sigma tools such as Monte Carlo simulation if not already being used can find application within the context of professional project management. First, as it solves problems at root cause, it tends to prevent problems from reoccurring. Second, in the final step of the DMAIC improvement process Control , controls and responses to special cause variation are institutionalized so that reaction to control issues is both rapid and sound. Six Sigma a Complement In the end, it is clear that Six Sigma complements and extends professional project management, but does not replace it. Both disciplines make important contributions to successful business outcomes.

# SIX SIGMA PROJECT MANAGEMENT METHODOLOGY pdf

## 6: The Lean Six Sigma Project Management Methodology

*Using Six Sigma tools throughout the project life cycle adds a series of troubleshooting tools and methodology to the project management system. Project management contributes tools to monitor and track the progress of the project and also adds controls to the problem.*

The definition and implementation of Six Sigma method within business environment let establish the DMAIC cycle and follow best practices of quality control and assurance. Furthermore, those companies need to consider the critical success factors and find out how to perform their improvement programmes using the popular approach. What is the Definition of Six Sigma Method? The gurus, who developed the fundamentals and best practices of quality management such as William Deming, Philip Crosby, Joseph Juran, and many others , provided Six Sigma definition and made detailed prescriptions for successful quality improvement programmes. Initially, Sig Sigma defines that  The methodology was originally implemented by Motorola in early 80s, when the corporation wanted to formulate a strategy which could minimize the risk of project failure in production process. Since that time, Six Sigma cycle has been adopted in other business processes, and today it is widely used by businesses to identify and eliminate the causes of lower process performance and to minimize process variation. Higher Process Performance through Six Sigma Change Everything that a business organization carries out can be regarded as a process or part of a process. The purpose of Six Sigma method is, provide an improvement mechanism to change a process or its component for higher effectiveness and efficiency. The approach involves that business processes production, selling, negotiating, and the like need to be characterized against average performance and variation, so that decision makers will use these measures to figure out how the processes can be performed in an optimal way equal or greater than the average performance level and at the expected value with minimal variation. Six Sigma Definition Many processes in business are prone to being affected by special causes that undermine the overall process performance and break client expectations. The method of Six Sigma in project management determines a set of best practices to change a process for better through eliminating defects and errors. Its ultimate goal is to achieve the expected performance and minimize the variability of a process to ensure this process delivers an outcome that meets client specifications and financial projections. Project-oriented organizations consider it the philosophy of making change to a process through statistical quality control and performance improvement. This philosophy involves combining various specialists into project groups for in-depth expert analysis and better decision making. Six Sigma can be defined as a project management methodology that determines how to improve the quality of products or services produced by a business organization through the removal of defects and errors. The method involves developing a business management strategy which is then implemented by groups of people within the same organization who are experts in various knowledge areas. Each expert group carries out the allocated job in an effort to complete the entire improvement project and meet the financial milestones. The Focus and Key Elements of Six Sigma Method The method is about ensuring continuous improvement to eliminate process waste and inefficiency, thereby increasing client satisfaction and improving employee performance. In this regard, the primary focus of Six Sigma in project management can be described by these three elements: A person or organization assigned to the role of Project Client will require greater process performance, reliability, on-time delivery, competitiveness, and more. Six Sigma approach focuses on delivering the expected results that ensure customer satisfaction. Then the personnel will be provided with incentives and opportunities to focus on improving their talents and abilities, thereby enhancing individual performance and satisfying the customer. It is important to method success that each participant involved in quality improvement implementation has a well-defined role with measurable targets. This element is often regarded as one of the critical success factors. Roadmap for Six Sigma in Project Management Managing a Six Sigma project involves following a certain sequence of steps or a life-cycle that breaks down a process to be improved into components with the expectation of quality enhancement within each. The project aims to improve all process components, so that the related financial and social impact will be addressed. It considers all possible value-added steps that could provide the highest possible reduction in

process variation. Traditional Project Management vs Six Sigma Cycle Best practices of traditional project management are widely used and followed throughout all sectors and all types of business, as they have been among the most pivotal managerial tools for years. Meanwhile, Six Sigma method is becoming more and more popular among companies that tend to find a solution that combines a robust quality improvement methodology with a sound project management process. In truth, traditional PM and Six Sigma cycle have many similarities, for example: However, there are distinct differences. Below on the picture you can see the comparison by such parameters as Scope, Schedule, Cost, Objective, Deliverables, Body of Knowledge. Any project activity impacted by CSFs requires immediate attention and excellence in implementation in order to ensure the achievement of one or more intended objectives. Typically, Six Sigma project is managed under success factors. For example, one of the CSFs in call center might be, implementing a client support system in a way that reduces dropped calls. The following four groups of factors make direct impact to the success of Lean and Six Sigma cycle:

## 7: DMAIC â€“ A Six Sigma Process Improvement Methodology | Quality Management

*Six Sigma is a robust continuous improvement strategy and process that includes cultural methodologies such as Total Quality Management (TQM), process control strategies such as Statistical Process Control (SPC), and other important statistical tools.*

List of Six Sigma companies Six Sigma mostly finds application in large organizations. The fact that an organization is not big enough to be able to afford Black Belts does not diminish its abilities to make improvements using this set of tools and techniques. The infrastructure described as necessary to support Six Sigma is a result of the size of the organization rather than a requirement of Six Sigma itself. Manufacturing[ edit ] After its first application at Motorola in the late s, other internationally recognized firms currently recorded high number of savings after applying Six Sigma. On top of this, other organizations like Sony and Boeing achieved large percentages in waste reduction. There is still a need for an essential analysis that can control the factors affecting concrete cracks and slippage between concrete and steel. Similarly, Six Sigma implementation was studied at one of the largest engineering and construction companies in the world: Two of the financial institutions that have reported considerable improvements in their operations are Bank of America and American Express. By Bank of America increased customer satisfaction by  Similarly, American Express successfully eliminated non-received renewal credit cards and improved their overall processes by applying Six Sigma principles. This strategy is also currently being applied by other financial institutions like GE Capital Corp. By changing the schematic diagram for the supply chain, Six Sigma can ensure quality control on products defect free and guarantee delivery deadlines, which are the two major issues involved in the supply chain. Juran described Six Sigma as "a basic version of quality improvement", stating that "there is nothing new there. It includes what we used to call facilitators. I think that concept has merit to set apart, to create specialists who can be very helpful. The American Society for Quality long ago established certificates, such as for reliability engineers. Crosby pointed out that the Six Sigma standard does not go far enough [29] â€”customers deserve defect-free products every time. For example, under the Six Sigma standard, semiconductors which require the flawless etching of millions of tiny circuits onto a single chip are all defective, he claims. Critics have argued there is overselling of Six Sigma by too great a number of consulting firms, many of which claim expertise in Six Sigma when they have only a rudimentary understanding of the tools and techniques involved or the markets or industries in which they are acting. The statement was attributed to "an analysis by Charles Holland of consulting firm Qualpro which espouses a competing quality-improvement process ". In most cases, more attention is paid to reducing variation and searching for any significant factors and less attention is paid to developing robustness in the first place which can altogether eliminate the need for reducing variation. The volume of criticism and rebuttal has filled books with language seldom used in the scholarly debate of a dry subject. Furthermore, errors in prediction are likely to occur as a result of ignorance for or distinction between epistemic and other uncertainties. These errors are the biggest in time variant reliability related failures. Under Six Sigma, the free-wheeling nature of brainstorming and the serendipitous side of discovery is stifled. It cites two Wharton School professors who say that Six Sigma leads to incremental innovation at the expense of blue skies research. So far, documented case studies using the Six Sigma methods are presented as the strongest evidence for its success. However, looking at these documented cases, and apart from a few that are detailed from the experience of leading organizations like GE and Motorola, most cases are not documented in a systemic or academic manner. In fact, the majority are case studies illustrated on websites, and are, at best, sketchy. They provide no mention of any specific Six Sigma methods that were used to resolve the problems. It has been argued that by relying on the Six Sigma criteria, management is lulled into the idea that something is being done about quality, whereas any resulting improvement is accidental Latzko  Thus, when looking at the evidence put forward for Six Sigma success, mostly by consultants and people with vested interests, the question that begs to be asked is: Everyone seems to believe that we are making true improvements, but there is some way to go to document these empirically and clarify the causal relations. Wheeler has dismissed the 1.

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## 8: Six Sigma and Project Management

*Process-based Project Management is a methodology that aligns all project objectives with a company's larger mission and corporate values. Thus all project goals and tasks remain strategic, and must roll up to the larger corporate objectives.*

Steps in Six Sigma Methodology written by: All these steps contribute to its success. In larger companies, a Director or other high-level employee takes the lead role in creating and guiding Six Sigma efforts. Also for large-scale efforts, Black Belts should be trained up front as they will be responsible for leading improvement projects, and in some cases for advising process owners on establishing appropriate metrics and procedures. Within each operational area of an organization, the Process Owners need to be identified. Green Belt training may also be established so that Process Owners and other key employees have the basic understanding and tools for working with Black Belts and managing processes. In its simplest form, success for a for-profit entity is typically defined using measures of profitability and shareholder satisfaction, customer satisfaction, and employee satisfaction. For nonprofits and other organizations serving the community, the definition will include measures of alignment with the mission, achievement of the mission and vision, and satisfaction of donors, employees, and the community. The dashboard is essentially a summary of the key metrics for an organization. In the early stage it will likely consist solely of metrics related to results, but as time goes on the team will establish input measures that strongly influence results, and those will be included as well. For instance, what threshold level of customer satisfaction does the company expect to maintain, and how much should sales increase year over year? These performance levels can be incorporated into the dashboard in a variety of ways, for instance by showing in green any metric that meets the performance requirement, in yellow or orange any metric that is at risk of shifting out of spec, and in red any metric that is not at an acceptable level. When performance does not reliably meet the established requirement, leaders will need to determine whether and how to act. Typically there will be quite a few opportunities for improvement at any given time, so decisions will be necessary regarding which hold greatest priority. The Six Sigma leadership team should establish a standard method of prioritizing potential improvement opportunities, and of determining what type of methodology is best for each case. In those cases, a Six Sigma project should not be chartered, instead the business manager should "just do it" and address the problem. In other cases, the details of a problem are not known, or the causes of a problem are not clear. In some cases, usually in organizations further along with their Six Sigma implementation, a design project DMADV or DFE can be initiated to create a new process or product or to completely re-create a process that is fundamentally not working. Define , Measure , Analyze , Improve and Control. Similarly, a design project should follow the standard methodology chosen. Once the improvement goal has been achieved, the project is closed out, and the dashboard is updated to reflect the new performance level. Additional improvement initiatives may then be chartered based on new findings uncovered during the original project, or based on priorities established earlier for potential projects. At a higher level, a successful Six Sigma initiative requires continuous attention to ensure that the established procedures, culture, and responsibilities are maintained. On an ongoing basis, leadership should be training employees, updating the dashboard with current performance levels and changes to key metrics, and revisiting priorities and procedures for selecting projects. Documenting these high-level procedures will also prove beneficial as employee turnover occurs and the individuals involved change.

# SIX SIGMA PROJECT MANAGEMENT METHODOLOGY pdf

## 9: Define, Measure, Analyze, Improve, Control (DMAIC Approach) | ASQ

*Six Sigma is a quality management methodology used to help businesses improve current processes, products or services by discovering and eliminating defects. The goal is to streamline quality.*

DMAIC is a problem-solving technique that can help you handle any problems you meet along the way. It includes five main steps: Define - you need to define the problem and clearly outlay your objectives. Measure - once you define your problem, you need to decide what measurements to use to quantify the problem. Analyze - after measuring, the next step is to collect and analyze data. You can use the collected data to compare it against measurements and evaluate its success. Improve - the next stage includes developing solutions to the problems. Your team should create a test and launch pilot studies to find the most appropriate solution. After coming up with a solution, your team can start building a plan and developing a timeline. Control - finally, in order to keep things under control and prevent recurrence, you need to perform control measurements monthly, daily, or yearly. Process optimization tools that allow you and your team to create more efficient workflows. Statistical analysis tools that allow your team to analyze data more efficiently. To be able to do calculations, you need to incorporate the tools into Six Sigma software, which will do the rest of the job for you. Here are some of the essential tools that almost every Six Sigma Model uses: Quality Function Deployment It will help you identify customer requirements and rate them on a numerical scale. Next, you list various design options and list them based on their ability to address customer needs. Finally, the designs with the highest scores will become the solution that you should implement. Fishbone Diagrams It helps you identify which variables you should study further. First, you start with the specific problem and list all the variables in their respective categories that are affecting the problem. After listing all the variables, the expert team should determine which variables are most likely to be causing the problem. The diagram looks like a fish skeleton, hence the name of the diagram. Cause-and-effect Matrix It helps your team identify, explore, and display all the possible causes and finally find the root cause to the problem. Failure Modes and Effects Analysis This tool allows you to focus on other processes and activities other than the issues that arise during the project development. This lets you list all possible failure scenarios, come up with solutions, and rank them according to how well they address your concerns. Finally, your team can prioritize things that could go wrong and develop necessary preventive measures. Six Sigma belts Since most large corporations and big industries incorporate Six Sigma into their business, the incorporation process requires not only ample time and energy but also huge financial resources. At its core, we can incorporate Six Sigma in two ways: Each team has a certain level of certification that depends on the degree of their expertise and responsibilities. Teams are categorized as follows: Black Belt - represents professionals and experts who need to have a high degree of expertise and a wide knowledge of all Six Sigma tools and methods Green Belt - represents people who are in charge of solving a number of issues that arise in the manufacturing environment if some issues become more complex, they can always consult the Black Belt. They usually handle administration and organization Yellow Belt - everyone else on the team. However, they are essential to the success as they help Green Belt people achieve their goals. Who uses Six Sigma After the big Motorola success, many companies from manufacturing and transactional industries banks and hospitals to oil industry and even entertainment industry have incorporated six sigma methodology in their framework. Six Sigma is inevitably a path to a dramatic improvement and brings immense value not only to the company but customers as well. Join us in pursuit of Real Work!

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