

The Integration of Six Sigma with Business Analysis sub-
disciplines to achieve desired results

- White Paper -

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Abstract

This paper will give a fresh perspective on incorporating Six Sigma methodologies in two different sub disciplines (Enterprise Analysis and Solutions Assessment and Validation) within Business Analysis in order to improve and offer more tools to practicing BA's in their everyday projects. It also gives another way to view projects from a Six Sigma perspective. The paper also includes a brief case study of two well known companies that illustrate issues of where Business Analysis and Six Sigma Methodologies could have helped and those benefits are illustrated in greater detail.

What is Six Sigma anyway? We keep hearing about it all the time. Plainly put, Six Sigma is a business management strategy, initially implemented by Motorola, that today enjoys widespread application in many sectors of industry.

The real definition of Six Sigma is that it seeks to improve the quality of process outputs by identifying and removing the causes of defects (errors) and variation in manufacturing and business processes. It uses a set of quality management methods, including statistical methods, and creates a special infrastructure of people within the organization ("Black Belts", "Green Belts", etc.) who are experts in these methods. Each Six Sigma project carried out within an organization follows a defined sequence of steps and has quantified financial targets (cost reduction or profit increase). In Six Sigma, a defect is defined as anything that could lead to customer dissatisfaction.

With the definition given above, there are two particular sub-disciplines that are part of Business Analysis in which Six Sigma techniques can prove particularly invaluable:

I. Enterprise analysis or company analysis

This aspect focuses on understanding the needs of the business as a whole, its strategic direction, and identifying initiatives that will allow a business to meet those strategic goals.

II. Solution assessment and validation

This part describes how the Business Analyst can verify the correctness of a proposed solution, how to support the implementation of a solution, and how to assess possible shortcomings in the implementation.

This White Paper will speak to these specific areas and explain how adopting Six Sigma in these specific areas can help Business Analysis as a whole.

Firstly, let's begin with Enterprise Analysis. As the BA or team of BA 's are deployed for an Enterprise Analysis project, Process Mapping and Business Process Management (BPM) is a part of Six Sigma that can be instituted and relatively easily. Put plainly and concisely, Six Sigma is about helping an organization make more money by improving customer value and efficiency. (Pyzdek, p.5). Above all, customers come first in a Six Sigma model, followed by everything else and that makes sense because at the most fundamental level, it is the customer driving the business revenue, nothing else. Whether someone clicks on a web link, phones or emails a company or transacts in any way, it is the customer doing all of this so rightfully speaking the customer pays and the old adage holds true that "the customer comes first". With this line of thinking, everything else becomes tangential and peripheral to that of the customer and so to make more money, it follows that a business needs to get as much business as

possible from existing and new customers and to keep them coming back. You now might ask, “that great but where does Business Analysis fit into this picture”?

At its very core, Business Analysts are involved in most projects where efficiency is to be improved (sometimes even acting as change agents) and that usually tends to translate to improving customer value, which in turn brings more revenue to an organization. It is a cycle. Using this definition throughout this paper, it is fundamental to include Six Sigma practices in wherever value to the organization is sought (usually by means of increased efficiency, whether it be a new process, a software tool or some other way of creating value for the organization). This is critical to company “bottom lines” because those companies that do not practice Six Sigma generally tend to spend anywhere between 25% to 40% of their revenues fixing problems (Pyzdek, p.5). This is why the process of Enterprise Analysis is so important. Bad or incomplete Enterprise Analysis can kill projects and put entire companies out of business the same way as if they weren’t practicing Six Sigma principles. If there is no awareness of defects and “leaks” and they stay unknown to a company, these inefficiencies can eventually kill a company by causing them to hemorrhage money until they go bankrupt. In this economy especially, it can be catastrophic.

Let’s consider a high level case study of two particularly well publicized examples one of which was General Motors (GM). Toyota was the other company, however, Toyota never actually went bankrupt but could have and averted it quite narrowly. For GM, although it was a short bankruptcy and they recently emerged, GM was doomed to fail and go into bankruptcy eventually sooner or later. It was an example of a truly “bloated” company that had little organization to many of its processes and clung to many old ideas. The customer was an “afterthought”. In fact the culture there was still very much the “old line” way of thinking that it forced them to go bankrupt. It was inevitable that change needed to happen.

If GM had a different mentality and approach and a keen awareness of their competitors, bankruptcy wouldn’t have ever been even a thought. Let’s also not forget that this was also the same company that in previous years held the title of being the largest company in the world (#1 ranking) for many years based on numerous financial factors. One of the most fundamental problems it had (that plague most companies) was one of efficiency and what value customers gave to the brand name, GM in general. GM literally ignored the competition by Toyota and Honda both of which consistently came out with improvements each year to their cars, models, efficiencies of their business processes and products (the cars themselves) despite being behind GM for many years. One of the other largest failures of GM was to ignore the growing sentiment of creating “greener, hybrid” cars that would use alternative means of fueling for transport and provide value for customers in that respect. This line of thinking never really caught on with the company culture and therefore created bad

decisions on management's part that caused it to enter bankruptcy and re-organize itself involuntarily. This was the best way for the competition to overtake GM.

The complex analyses that would have helped GM avoid bankruptcy would have needed to take a "Bottom Up" approach starting with the customers and then performing a complete review of the company to find out where all the "leaks" are and figure out a solution to plug those leaks permanently (or at least with a very durable, long lasting seal) and get the organization closer to Six Sigma and back into the "black" of profitability. What they are doing now is selling off some assets which is one of many changes that are needed there. This will help them become a different company by being "leaner and meaner". It is a perfect case study because GM produces the product of cars, which are a very complex and expensive product to produce in the first place and require huge capital investments in equipment and resources. We can all imagine that with all the different models and manufacturing at different plants around the globe, the product is prone to a multitude of defects. Every car company has this challenge. The bottom line is that many more car companies are better at minimizing their defects and improving efficiencies than GM was able to. None are perfect but some companies do business in a given industry better than others and it shows that being biggest doesn't mean always being the best. In this case, it was far from it.

The case of Toyota is somewhat different than GM. Toyota, which for years has embraced the notion of Kaizen (continuous improvement) and Six Sigma and was one of the world's most admired companies, made a large error in judgment. The executives were so in need to be number one and overtake GM, that they had forgotten their customers' needs (which is primarily to make cars of value and help save them money). (Lippert, p. 9G). They completely lost sight of that and Toyota started churning out larger and more expensive cars and trucks. Yet again we see here that customers' needs were ignored. Six Sigma principles will not work if the basic tenet is ignored, which is the customer. A company that practices Six Sigma can never lose sight of that. So too, like GM, Toyota must face a changing world and change with it or perish.

We have seen a couple of case studies that bring the central tenet of Six Sigma home. How could these companies be improved through Six Sigma and how could Business Analysis help? A fundamental performance improvement model of Six Sigma is the process of DMAIC. The components are: Define, Measure, Analyze, Improve and Control and is used when a project's goal can be accomplished by improving an existing product process or service. (Pyzdek, p. 237). DMADV which is the other model and consists of Define, Measure, Analyze, Design and Verify is where the project goal is the development of new or radically redesigned product, process or service. (Pyzdek, p. 239). The Design phase is akin to establishing a project charter, process map and benchmarking in much the same way as Business Analysts do in

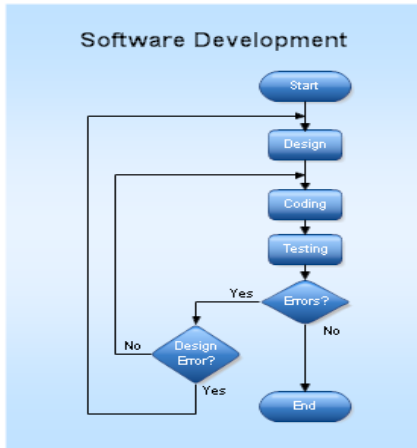
Enterprise Analysis. The Measure phase deals with the quantitative aspects (i.e. Data Mining, Systems Analysis, Pareto Analysis). (Pyzdek, p. 239) Analyze is the true quantitative heart of Six Sigma and analysis in general and what would also comprise most of a Business Analyst's work. (Pyzdek, p. 239) In this phase, Process maps and charts, models, simulations, hypothesis testing, inferential statistics are used. (Pyzdek, p. 239) Improve is using Project planning and management tools, prototyping and doing pilot studies and lastly, Control is to align with ISO standards, reporting, bid and cost estimating models and so forth. (Pyzdek, p. 239). Many of these themes tie directly with business analysis in a myriad of ways.

In Analysis within Six Sigma Process mapping – the following processes are involved: Select Process, Define the process, Map the primary process, Map alternative paths, Map inspection points, use the map to improve the process. (for instance Service: Customer Inquiry to Resolution). This an example when a Business Analyst can help promote the process of change by performing business process analysis and finding out the problems and possible solutions that may be required to change entire business processes and/or the systems and how they work.

Resources that would be needed for such an undertaking: Project Champion (Management – to provide funding and resources), Team Leader (organize and conduct meetings – the BA), Action Item Owner (assigned tasks) and Team Member (assigned tasks) – The team should develop 2 maps, the As Is and the Should be (To Be). Should be (To Be) forms the basis of re-engineering. (Pyzdek, p. 253)

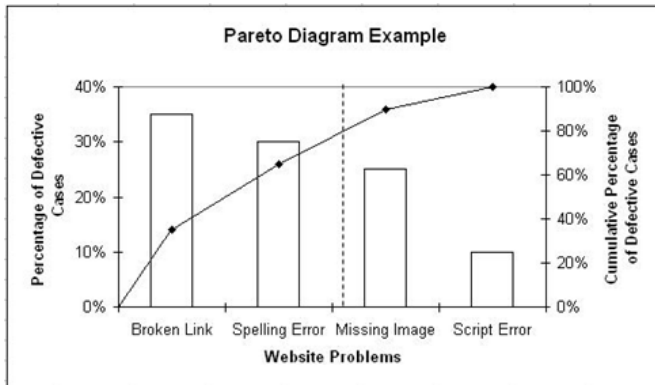
In Enterprise Analysis, objectives need to be SMART= Specific, Measureable, Achievable, Relevant and Time Bounded. (BABOK 2.0, p. 83) In the second part, Measurable, is where the analytics and quantitative analysis of Six Sigma can prove invaluable. In these instances, Benchmarking can prove most valuable in order to provide a first basis of quantitative analysis so there's something tangible to measure from the start for example, Benchmarking customer service, if the service levels are an issue then these can be Benchmarked first using a variety of statistical means to get within 6 sigmas of the standard deviation (bell curve). Benchmarking is more than goal setting, it's focus is on practices that produce superior performance and for Benchmarking efforts to succeed, there must be commitment, understand the "big" picture (goals to achieve) and focus on not only the metrics involved but the process. Three other methods in addition to Benchmarking are most useful when incorporating Six Sigma efforts into Enterprise Analysis:

- Flow Charts of processes – Both "As Is" (Current Capabilities of Business Architecture) and "To Be" (What needs to be done to "get to the next level")



Flow chart example of a process

- Pareto Analysis - Pareto Analysis is a statistical technique in decision making that is used for the selection of a limited number of tasks that produce significant overall effect. The Pareto Principle (commonly also known as the 80/20 rule) is basically the idea that by doing 20% of the work you can generate 80% of the benefit of doing the whole job.



Example of a Pareto Diagram

- Cause and Effect Diagrams - A Cause-and-Effect Diagram (also known as a "Fishbone Diagram") is a graphical technique for grouping people's ideas about the causes of a problem. It forces the team to consider the complexity of the problem and to take an objective look at all the contributing factors

By performing these kinds of analytical studies using Business Analysts and Six Sigma team members, the gaps will also be revealed more easily and accurately which then can be documented for improvement purposes as well and to define solution scope. Incorporating Six Sigma techniques also bring to light the defects and can make for a more convincing, "iron clad" business case backed by statistics and data.

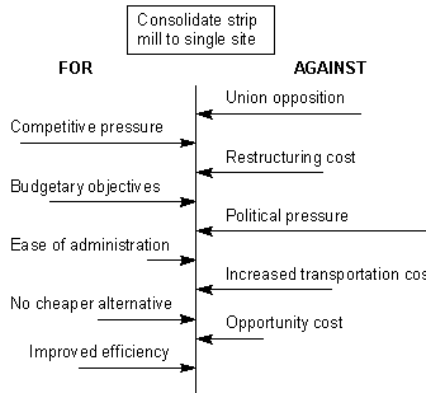
Solution Assessment and Validation describes the tasks that are performed in order to ensure that solutions meet the business need (at an acceptable, given level of quality) and to facilitate their successful implementation. These activities may be performed to assess and validate business processes, organizational structures, outsourcing agreements, software applications, and any other component of the solution. (BABOK V2, p. 121). The Business Analyst is to make sure that the solution maximizes the value that was to be delivered to the stakeholders in the first place. The way Six Sigma can augment this through quantitative statistical analyses to ensure the (solution and related functionality, data, etc) are accurate, valid and provide the kind of value that is needed from the initial Vision and Goal statements outlined at the start of the project. For example, a company may now have business reasons for “mining” its data where it didn’t have such a purpose in the past and it needs to look for a solution (most likely an Enterprise Level Decision Support/BI System). One needs to make sure when this solution is implemented, that it is assessed and properly validated through various efforts described below. The goal is to make sure that it will achieve and add value to the organization, thereby helping it to better understand its customers, further driving revenue, and back to that cycle I mentioned earlier in this paper.

Techniques commonly used in Business Analysis that tie into Six Sigma:

- Acceptance and Evaluation Criteria
- Decision Analysis through the use of data and data modeling
- Reliability and Validity of Data through Enumerative and Analytic studies – using various statistical methods to test validity of data and solution that they fall within normal distribution patterns (i.e. the famous “bell curve”)
- Hypothesis Testing and various other Measurement Analysis Systems
- Process Mapping and Modeling
- Force Field Analysis - Sometimes there are not clear and simple reasons why an idea is useful or otherwise - the pros and cons are more uncertain and possibly distant forces.

'Force' is a metaphor that everyone viscerally understands. Length of arrow is already used in mathematics for vectors that indicate the size of a force. Use it to understand the forces for and against an idea.

Use it to explore how people may oppose or support an idea.



Example of Force Field Analysis

Defect Assessment – Analysis and Assessment of all defects uncovered within a project, prioritizing them in a matrix format and deciding which defects to fix versus which ones to leave (costs of fixing vs. what added value will result to fix a particular defect). One must focus on those defects to fix that bring the most value and so on. Also, gaps and related shortcomings that a system should address but does not could be considered a defect. Enterprise Analysis can help uncover defects in the very beginning so that appropriate planning and solutions aimed at fixing the defects can be rectified during the other stages of analysis.

Finally, Root Cause Analysis (RCA) are methods aimed at identifying the root causes of problems or events. The practice is predicated on the belief that problems are best solved by attempting to correct or eliminate root causes versus merely addressing the immediately obvious symptoms. By directing corrective measures at root causes, it is hoped that the likelihood of problem recurrence will be minimized. RCA can be used throughout a project and in all the various phases that a Business Analyst would be involved in. Pareto Diagram, Fishbone diagram, Histograms, etc. are just some of the common tools used.

As we can see throughout this paper, Six Sigma is critical in achieving maximum results in costs, efficiency and most importantly customer service by Business Analysts in both Enterprise Analysis and within Solution Assessment and Validation efforts particularly. This doesn't mean these principles do not apply in other sub-disciplines but they most importantly apply in these two specific areas. It is a quantitative, rather than a qualitative approach which also lends more credibility to these methodologies because once the research has been done, the numbers are what drives the business in the end. Overall, there is less variation using this type of quantitative methodology.

Biography of Author

Steven J. Gara, MS, PHR, CBAP is a multi-faceted business professional with a wide array of skills and experience in a variety of industries including Software, Entertainment (including being a musician), Travel, Banking, Insurance and Tax Lien investments. Educationally, he holds a Bachelor's Degree from Temple University and a Master's Degree from Cornell University.

He has over a total of 15 years of experience combined in Human Resources and Information Technology consulting, has an entrepreneurial personality and a creative side that allows "thinking out of the box" for any given issue. The ability to think creatively and to step back and see the bigger picture and research all the facets of a given issue is what sets him and the company apart from others and his experience in Six Sigma Principles also helps clients to maximize their profits and minimize losses.

These credentials make both him and the company uniquely qualified to handle a variety of disparate business issues and offer a diverse array of services. The website is:
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