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DECEPTIVE MYTHS ABOUT SIX SIGMA - SIMPLIFIED

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Abstract

Six Sigma is a part of our business success for more than decade. Adoption of six sigma methodology arises certain myths related to implementation and getting final results from it. There is certain myths related to organizational level likewise, small scale organization are afraid to adopt this methodology. So, this article highlighted some common myths and reality about six sigma. This paper helps people to resolve their wrong myths about these methodology and getting right fit from it. This research paper provides an excellent resource about six sigma myths and realities by critically analyzing six sigma literature. It is also provides the microscopic view about key points of some academicians and practitioners. As illustrated in many research papers, six sigma is not initiative to the organization. It is a disciplined and structured problem solving methodology which relies on actual data. By reviewing these concept we can understand the key concept, key principles of statistical thinking, tools and technique of Six Sigma. According to the practitioners and researchers point of view six sigma is continuously growing as a powerful management initiative for achieving and sustaining operational and service excellence.

Key words- Six sigma, Statistics, Myths, Realities

INTRODUCTION

Six sigma methodology is widely adopted in several organization from manufacturing to service and large scale organizations to SMEs. When the product complexity and customer expectations are increased it will lead organization to respond to this changes by Implementing six sigma methodology (Manville et al., 2012). Six sigma methodology follows a project-by-project structure to accomplish certain improvement objectives. These projects are managed according to using DMAIC improvement methodology (de Mast and Lokkerbal, 2012).

Customer satisfaction, cost reduction and profitability of the organization are motivating factors of the implementation of six sigma methodology. There are large number of companies that have failed in achieving desired result from six sigma (Albiwi et al., 2015) Six Sigma program faces various types of issues in different areas which need to be clearly addressed. Especially, In the Indian organizations faces challenges in getting positive support from employees and top management (Kumar et al., 2006; Antony and Desai, 2009). Although, six sigma methodology becomes very popular due to significant success, the methodologies are not a solution or remedy for all difficulties or diseases that someone insist. In General, as six sigma methodology accepted widely, certain myths are unexpectedly faced more and more frequently. Some of these myths are listed here. These myths are very common in all level of employee in the organizations.

Like any other initiatives, in six sigma also there were inherent difficulties in executing the project. It is very difficult to complete training during their busy schedules of employees of day-to-day work. It is not easy to get the support from the people from the lower level in the organizations for the participating in the implementation of the solution. By involving people at all level in the organization becomes a team to achieve the expected results. Several statistical tools and techniques were effectively utilized to make inference during the project (E.V. Gijo et al., 2011)

METHODOLOGY

This paper explores the most familiar myths that lead to reason for not adopting six sigma methodology in many of the organizations from different sectors, which have been published in various academic journals, by systematically reviewing the literature. Until now, few systematic reviews have been published regarding six sigma myths. According to the authors of these areas there is a clear need for more systematic reviews to be carried out in this area.

Until now, only two systematic reviews have been published regarding common myths about six sigma, which were carried out by Maneesh kumar et al. (2008) and Doug sanders (2000) who conducted a general review. This paper aims to present a review of all journals papers that conduct a database regarding Six Sigma critical success factors, critical failure factor, barriers for implementation, myths and practices related to this study.

The journal search for this research was undertaken through well-known academic data bases from Emerald, Elsevier, Taylor & Francis and IIIE journal and some other articles.

MOST COMMON SIX SIGMA MYTHS

When six sigma introduced to many organizations, the initial reactions varied from a lot of enthusiasm to an absolute doubtfulness (Antony, 2004a, b), with the latter mood reflected in comment such as:

Six sigma is only for the manufacturing firms:

six sigma initiated by Motorola in mid-1980's and greatly followed by manufacturing giants like Allied signal and general electric (GE), setting a hawk that it is only works in the manufacturing companies. These results that service oriented manufacturing industries stay away from six sigma because they see as a solution (Maneesh kumar et al., 2008)

Six sigma works only in large organizations: As a six sigma originated by manufacturing giants like Allied Signal and general electric (GE), the common belief all around is that its application is up to large organizations only because of their endless resources and large teams. A quality digest columnist and six sigma consulting expert Thomas Pyzdeksays that small companies might have more difficult time effectively implementing six sigma (Dushmare, 2001).There is still less documented evidence of its implementation in small organizations. (Maneesh kumar et al., 2008)

Six sigma is all about statistics: A major misconception about six sigma is that it is only focus on training of various statistical tools and technique and almost ignores all the human factors. This myths derives from the name itself, where sigma represents the Standard deviation. The statistical terminology "sigma" provides an impression of six sigma being a statistics and measurement program. (Maneesh kumar et al., 2008)

There is no road map that is through or flexible enough to guide adequately all types of projects: A Road map usually shows a sequential path of activities and decision required to achieve improvements in process outcomes or parameters. Such road maps are over prescriptive. A claim that following a prescribed road map will lead to successful project work is counter to the scientific process that is a process of induction and deduction. (Doug Sanders & Cheryl R. Hild, 2007).

Six sigma requires well-built infrastructure and enormous training: Ford employing six sigma in any organization it requires new skills, and this primarily means training the black belts and green belts who will guide and manage the improvement projects and programs. In the small business and public sector employees are of the opinion that six sigma demands enormous training cost and additional effort (Six Sigma SPC, Smith, 2005).

All key characteristics are not measurable: Many individuals involved in six sigma implementations focus only on measurable performance features .in fact our own material we quote, "if you cannot measure, you cannot improve". (Doug Sanders & Cheryl R. Hild, 2007).

It is similar to the total quality management (TQM): It is often said by engineers and managers in small and big companies that there is nothing really new in Six Sigma compared to other quality initiatives witnessed in the past (Antony, 2004a, b). Reed (2000) says that there is nothing all at new about six sigma methodology and relate to it has been around for many years and just called something else. Six sigma employ some of the well-used tools and technique of TQM. According to this many organizations makes mistake of setting up Six Sigma as a quality initiative, putting it in the same category as TQM. The common phrase often used by TQM practitioner is "Show me where six sigma involves anything new" (Andrea Chaiarini, 2011).

The true purpose of six sigma is not in the statistical analysis of the data but in the acquisition of data. Statistical analysis only lead to insights and more confusions- not solutions: It is believed that past data has no value without understanding of its Limitation which is completely not useful without knowledge of subject matter and no matter will affect that what kind of a statistical model might imply. Statistical significance is a conditional statement that are multiple comparison of factors effects of some unidentified variations (Doug Sanders & Cheryl R. Hild, 2007).

MYTHS SIMPLIFIED

Six sigma is only for the manufacturing firms: The Application of six sigma methodology extends beyond manufacturing to services, government and public sectors, health care and nonprofit organizations. (Antony et al., 2004). Motorola developed Six Sigma and implemented it first in manufacturing. They started implementing it their non-manufacturing areas of the organizations from 1998 onwards. For the expanding range of six sigma, the two application areas that seems to be rising to the top of the heap are healthcare and financial services (Hoerl, 2004).Since the last couple of years the popularity of six sigma as a means of improving quality of service and customer satisfaction growing exponentially. For improve service effectiveness (i.e. meeting the desirable attributes of a service) and service efficiency (i.e. time and costs) six sigma provides a disciplined approach. The objective of six sigma strategy in service industry is to understand how to defects occurs and then to devise process improvements to reduce the occurrence of such defects, these results to improve overall customer experience and customer satisfaction. One of The first financial institutions applying these methodology is the financial division of GE capital in order to increase their profitability and customer satisfaction (Antony et al., 2006). After that various financial institutions and banks have followed such as American express, UBs, Lloyds, city corp, Bank of America, HSBC .Common Wealth Corp was the first Health care organization to implement six sigma fully into its culture in partnership with General Electric. One of the major hurdles service oriented organizations must overcome is the notion that, because their company is human driven, there are no defects to measure. This is the wrong, say the expert (Antony et al., 2007).

Six sigma works only in large organizations: Six sigma is about problem solving and problems are everywhere. It does not depend on kind of organization or size of industry this problem solving methodology is applied to. It can be a retailer, a wholesaler, a manufacturer or a service organizations. It does not matter if the company is 400 employees Company or Ten employee small business, six sigma will work as long as you follow the process effectively. According to the problem complexity and resource limitation, the SMEs do not require an extensive role system where Master Black Belts and Black Belts are involved in projects as are applied to large organizations. In order to assist SMEs with the implementation of six sigma, the authors are recommending a six sigma user group (SSUG) to share and exchange experience of successful six sigma projects within SMEs as well as with similar companies, which embark on six sigma organizations' strategic directions and increasing the needs for coaching, training and mentoring (Maneesh kumar et al., 2008). There is nothing inherent in six sigma that makes it more suitable for large organizations. They also suggests that the greatest barrier to implementation in small organizations to date has been the way the major six sigma training providers have structured their offerings. More Recently as more and more sets of deployment guides and training material became available, the pricing structure begun to change (Snee and Hoerl, 2003).

Six Sigma is all About Statistics: Organizations requires not just statistics to achieve six sigma quality level but more importantly requires changes in organizational culture and commitment from the top management permeating the entire organizations. Six sigma utilizes statistics as one of its tools to analyze, interpret and present data (Pande et al., 2000, Antony et al., 2005). It used for the change the mindset of people, making shift from a traditional approach of problem solving to a proactive approach, based on facts and the correct analysis of data for decision making purposes. Computer software is also available to analyze the data, which can be done by one or two members in the six sigma team, thus speeding up improvement process. Engineers and managers need not to be experts in statistical Methodology. They need to be wise in terms of when the use of statistical methodologies can provide more efficient, effective information on sources of variation in product or process (Sanders and Hild, 2000). It requires intelligence in terms of correct use of statistical methodologies, can provide more efficient, effective information on sources of variation in product or process (Sanders and Hild, 2000). Six sigma is not purely all about statistics. Six sigma is a philosophy of action and learning based on process, variation and data, it is also a drive for defect reduction, customer satisfaction and process improvement are based on the "statistical thinking" Paradigm. It offers practitioner with the means to View process systematically. It is a systematical thinking from process-variation-data to define-measure–analyze-control (DMAIC) (Hare, 2005).

There is no road map that is through or flexible enough to guide adequately all types of projects: A typical six sigma course will include a road map that supposedly guarantees the likelihood of successful application of the concept of methodologies. A claim that following a prescribed road map will tend to successful project work is counter to the scientific process that is a process of induction and deduction. An important strength of the six sigma process should be development of critical thinking and improved use of data by individuals of the organization. There is no standardize road map or tool set for ensuring conceptual skill in understanding or operational skill in appropriate application. In other words there is no roadmap that could satisfies all requirements for successful completion of project. To insist that all individuals should apply the same set of tools in the same order quickly creates cynicism in the organization. (Box et al., 1978)

Six Sigma requires strong infrastructure and massive training: To implement six sigma in organization requires new skills. An organization can start six sigma deployment by identifying a manageable number of critical projects that are top priorities for the organization and can be successfully completed with a few months. This will involve fewer resources and can win top management commitment and faith in the initiative. One should focus on type of business, complexity of the process, availability of resources and develop an organizational infrastructure required for the company. (Maneesh kumar et al., 2008). It is not required that large organization having 1,000 employees, there should be 100 black belts or 300 greenbelts. The Rule of thumb is that the mature Six Sigma organization will develop 1 Percent of its work force as full-time black belts, although it is not uncommon to start with about 0.5 Percent.(Keller, 2005)

All key characteristics are not measurable: Six sigma focus on the ability to measure critical response variables on product or process for the sake of discovering sources of variation. To understand the true causes contributing to the defect category, measurement must be established at upstream process stages. Reliance on the end process count will provide only very little knowledge concerning the variations contributing to overall yield issues. (Sanders and Hild, 2000). The need to measure critical process or product parameters to understand cause-and-effect relationships does not transfer to the need to measure all of the important aspects of management. The main failure in management is that most metrics reflect and results (e.g., no of ingenerates for thon-compliance, attrition rate, etc.) as opposed to characteristics of the means to the result. One cannot always measure the means to the end – nor would one want to. "Measure of productivity do not lead to improvement in productivity". (Sanders and Hild, 2000)

It is similar to the total quality management (TQM): According to Jiju Antony (2009), six sigma constructed on many aspect of the previous continuous improvement initiatives like TQM.

Six sigma adopts some characteristics of TQM are as follows:

- Customer centric approach;
- A process vie of work;
- A continuous improvement mindset;
- Improving all aspects and function of organization;
- Data-based decision making;
- The use of statistical tools on a microscopic basis.

By comparing with all the aspects of TQM, six sigma has both "deployment" aspects and a 'methods and tools" aspects. Most of the six sigma methods and tools were applied in TQM initiatives, so they are not really new. Six sigma is the systematic and disciplined integration of powerful problem solving tools and techniques into the DMAIC framework. By comparing with TQM practices, an integrated approach was sorely missing in most TQM implementation, where the practitioners always struggled trying to wade through a diverse set of statistical and problem solving tools. Six sigma benefits more because it provides the required leadership, organizational culture and infrastructure to enables the methods and tools to be successfully deployed across the business. While this aspect was totally missing in TQM philosophy. TQM doesn't owe any infrastructure for the deployment of TQM in any organization. Author believes that it would take much more time to realize any benefits from the implementation of TQM as opposed to six sigma. While six sigma deals these deficiencies with three major success factors – committed leadership, top talent and supporting infrastructure.

Dahlgaard and Dahlgard-Park (2006) suggests that alternative roadmaps to TQM are very hazardous to embark on without the correct company culture - with respect to various debates surround the issue of which 'roadmap' is best to follow when

wanting to achieve world class quality. Organizations requires understanding that simple roadmaps like six sigma will never work without a cultural background or the core principles of TQM. Six sigma should only be looked upon as a new 'roadmap' to follow, once TQM has successfully implemented, or once the organization is in the process of implementing it.

The true purpose of six sigma is not in the statistical analysis of the data but in the acquisition of data. Statistical analysis only lead to insights and more confusions- not solutions: Raghunath and Jayathirka (2013), suggests that in the six sigma project identifying what data and collection of all data is essentially important activity. Data collection is little bit tricky. It is important to collection of necessary data requires enough time to collect it correctively. Collecting large or little bunch of data becomes hurdles in the improvement process. In the MEASURE phase DMAIC includes obtaining information about the process that is not effective or furthermore require improvement. For the measure of impact of the problem there is many tools to be used.

Next phase is to ANALYZE the gathered data. For the conformation of problem existence and quantification of problem statistical tests are performed on the basis of collected data.In the six sigma project it is highly crucial for training on data collection. There is five step of data collection process:

1) Define the goal for data collection

2) Construct the procedures and operational definitions

3) Proper validate Measurement System

4) Start data Collection

5) Ensure that people always aware about data collection guidelines and continue improving measurement system.

It is purely depends on the training and skill of data collection leader with necessary software. Without familiar with the art of data collection techniques and effectively analysis of data for six sigma project would might become a tedious task.

ACCOUNTABLE MERITS OF SIX SIGMA IN TODAYS' HORIZON

Over the decades of six sigma initiation in Motorola it plays a major role to sustain in the competitive world. But in recent time the question arises that “issix sigma Sustainable in the Recent Trend? And if it is sustainable than how long it will sustain?” Common belief in the industrial environment is that it is sustainable and will last quite for a long time. Reason for accepting six sigma is derived from some practitioners and experts.

- Six Sigma is useful in large organizations as well as small scale industries and have broad applicability in not only manufacturing but also service, government, healthcare and educational institutions. Six sigma works to improve the value adding transformations which occurs with the process steps. The appropriate use of six sigma tools useful on anyone problem therefore depends on the nature of the specific problem to be solved (Antony j et al., 2017).

- Six Sigma methodology is a flow of application of tools; a strategic filter to select the most proper tools will encourage practitioners to follow the best flow throughout their projects. As the team members earn their own experience about six sigma tools, they will build their own filtering strategy to select the tools of six sigma which they need (Meryem U., 2016).

- The implementation of six sigma methodology resulted in understanding the problem from all aspects, qualitatively as well as quantitatively, and laying out the improvements through effective analysis of the roots of the problem. (Darshak Desai, 2008).

- Since six sigma is project driven, careful use of tools and technique for problem solving is essential. Improvement tools used in the Six Sigma approach help evaluate the effectiveness of the initiatives. In manufacturing set ups particularly, where a part of the supplier acceptance criteria is to adopt six sigma standards and goals, validating and monitoring supplier performance using six sigma standards would definitely result in win-win situation for organizations (Sunil s. and Anuradha R., 2012).

- By following six sigma applications Project-by-Project in Small scale organizational sectors can improve their understanding about this strategy along with consolidating on the gains from it in improving profitability and productivity of the organization (Darshak Desai, 2008).

- Six sigma has becomes prime mover organization's drive for global competitiveness and the related statistical tools in six sigma offers unmatched opportunities for non-statisticians to integrate analytical tools with technical problem-solving. It follows rule of a changing organization's culture that results from the behavior of employees and managers alike, ultimately it realizes the goal of a learning organization. (Maneesh kumar et al., 2008)

- The efficient learning among the project members and relatively competition based learning will improves the level of confidence and eagerness in six sigma implementation practice. There is successful connectivity between six sigma and organizational training. It also proposes six sigma role structure and its focus on organizational innovation. Also, six sigma is a structured improvement procedure with administrative and technical innovation that leads to identify the existence of potentially mediating variables.(Michael S. and Subhash N, 2012)

- Javedhusen M and Darshak D (2015), suggests that if six sigma methodology is applied to critical processes with correct tools and technique in each and every state of DMAIC methodology than it has capability to improve the process and give tremendous improvement in the performance of the process. Six sigma methodology also develops the useful awareness for industry to concentrate on the requirements of quality consciousness and enhance the performance of the process. They also stated that one of the critical success factor of the six sigma that is top management commitment was realized because whenever resources are required top management always supported up to their extend which makes the projects to be successful implementation.

CONCLUSION

According to Jigar D and Darshak D (2017), Continuous improvement of product and process quality is always challenging and creative task in today's era of globalization. For that various quality tools are available and used for different purposes but some of them are successful and few of them are not. Considering this kind of complexity, various new techniques are being introduced by the industries as well as proposed by researcher and academicians Lean six sigma is the solution of this complexity and perfect combination of tools and techniques. Darshak D (2012), suggests that six sigma methodology addresses the major root causes and assured the targeted result, both in terms of improvement desired and fixed time span. Author strongly urges that six sigma is a disciplined, data-driven approach and methodology for eliminating defects in any process from manufacturing to transactional, from product to services. This breakthrough improvement strategy delivers result of productivity, profitability and quality improvement based on its highly effective approach. The main aim of six sigma methodology is to reduce variability. This technique is very easy to those who are little bit familiar with the statistical principles of targeting mean to the required nominal mean and controlling variance around the mean. Accordingly it is much more than just a statistical approach to a problem solving tool.It is great extent to achieve improvement in both top and bottom line through valued customer satisfaction.

To implement six sigma in an organization management need to make sufficient planning in providing overview training for all employees. Besides that it is necessary to select one of the associate who is very knowledgeable about the organization structures and cultures as a six sigma black belt leader. This person should be trained to take the control of projects and coaches the teams and get into all analytical tools and suitable software suitable for data analysis and lead the organization into the improvement into the long run. The most important points need to keep in mind as organization gets ready to implement six sigma are:

- Introducing the case well studied for change;
- Starting with caution and doing it slowly;
- Going after the right team to work with;
- Creating the right foundation to work on;
- Let the team involved in all stages of the work;
- Communicate with the team members; and
- Train in accordance with the strategies undertaken.

Besides, that Six Sigma projects have to be carefully reviewed, planned and selected to maximize the benefits of implementation. The Project has to be feasible, organizationally and financially beneficial and customer oriented.

FUTURE SCOPE

For quality improvements and business excellence, six sigma, a systematic framework have been widely publicized in the recent trend as the most effective means to compete the quality problems and win customer satisfaction (Goh, 2002). But some researcher and experts suggests that the scope of six sigma is too narrow and the research is not being well developed furthermore, too much research has been focused on descriptions of practices rather than on theory development that. Consisting of core principles such as process, variation and data-statistical thinking may be used to create a culture that should be deeply embedded in employee within any organization embarking on six sigma programs.

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