



SIX SIGMA: APPLICATION AND USE

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ABSTRACT :

Six Sigma is a quality measurement tool and its main purpose is to maximize the customer satisfaction and minimizing the errors and defects that takes place in offering products and services. It has more relevance in the Production industry, though Service industry is not an exception. Its success in Production Industry is well tested; it is yet in its preliminary stage in terms of its application with regard to Service Industry. Consistency needs to be maintained in order to bring quality in services, DMAIC and DMDAV or DFSS of Six Sigma theories are described in brief in this paper. This paper focuses on the review of Six Sigma to LIS field in terms of its services and its significance to LIS field.

Keywords: Six Sigma, DMAIC, DMDAV, customer satisfaction, service industry.

INTRODUCTION :

Even though the quality management tools existed from long time, there use has been very less in the service sector. Application of Six sigma has enabled effective scientific management of service industries. In terms of library services its ultimate goal is user's satisfaction. Six sigma enables continuous appraisals and helps in improving the quality of the library services in order to satisfy the library users in an effective way (Chinnadurai D, 2014). The basic quality tool of Six Sigma are Statistical process control, histogram, run chart, failure mode, and effect analysis, Cause and effect diagram and other tools that have been in existence from long time. In order to satisfy the user requirements the quality of the library services should be improved and this should be done by means of introducing new services. By implementing six sigma in libraries user's satisfaction can be achieved. Six sigma provides a framework that unites three basic quality tools with high level





management support. Six sigma has been introduced in the 1980's but it has its root can be traced in Statistical process control (SPC) which first appeared in 1920's. Its success has been tested in companies like Motorola, General Electric and Allied Signal. Implementation of Six sigma has been very successful in manufacturing industries but in case of service industries its implementation has got success only in banking and healthcare industry all other service providing industries have not been that successful in its implementation.

What is Six Sigma?

Six Sigma is a combination of two words i.e. 'Six' and 'Sigma'. Sigma (σ) is a Greek letter used in statistics and mathematics for defining standard deviation. The Sigma scale of measurement shows defect per unit or probability of a failure. Six Sigma means "a systematic innovative activity to statistically measure and analyze causes of defect that happens in all parts of management and then remove those causes". According to Six sigma defect include all causes that interrupt process or service. It is a methodology to define a problem from the viewpoint of the manager or user as a defect and ascertain its causes in order to solve it. As a theory it was originally used in manufacturing. Today it applies to service sector also. Six is the number of sigma measured in the process. 'Six Sigma' is highest in measurement scale and can be achieved only when the output to defect is not more than 3.4 out of one million opportunities of defect (Kaushik Chitra, 2007).

Six Sigma is uniquely driven by close understanding of customer needs, disciplined use of facts, data, and statistical analysis, and diligent attention to managing, improving and reinventing. Six Sigma stands for Six Standard Deviations (Sigma is the Greek letter used to represent standard deviation in statistics) from mean. It is statistically based methodology to improve product quality to meet user's needs.





Coronado and Antony has pointed that six sigma methodologies have recently gained wide popularity because six sigma has proved to be successful not only at improving quality but also at large cost savings along with these improvements. Kumar stated that six sigma is a statistical measurement, which provides the opportunity and discipline to eliminate mistakes, improve morale, and save money. Doing things rightly and keeping them consistent are the basic ideas behind six sigma. A fundamental objective of six sigma is to achieve customer satisfaction and continuous improvement in processes (Sonawane Chetan S, 2011).

Advantages of Six Sigma

- i. It helps in minimizing the effort and maximizing user satisfaction Six Sigma helps understand and manage user needs.
- ii. It line ups the key process to achieve the needed requirements.
- iii. It exploits accuracy in data analysis to minimize defect in the process.
- iv. It brings fast development and continues improvement to management process.
- v. It helps to work smart rather than hard.
- vi. It brings efficiency among the employees.
- vii. Training is an integral part of management system.

Disadvantages of Six Sigma

- i. The quality standard should be according to specific task and measuring 3.4 defect per one million as standard lead to more time spent in areas which are less profitable.





- ii. Six sigma gives emphasis on the rigidity of the process which basically contradict the innovation and kills the creativity.
- iii. Six sigma is a bit gimmicky and simply rebranding of the continuous improvement technique and tool.
- iv. Implementation of Six sigma constantly require skill manforce.
- v. While converting the theoretical concept into practical applications there are a lot to real time barriers which needs to be resolved.

Application areas of Six Sigma in Library Management Function

The application areas in which the Six Sigma tool could be applied are as follows:

- i. Acquisition
- ii. Classification & Cataloguing
- iii. Circulation
- iv. Stack Maintenance
- v. Inter Library Loan
- vi. Reference Service (Dutt, Mahipal, 2013).

Six levels of Six Sigma Systems

Level1: Making clear the services given by the library.

Level 2: Making definite the reader's need from the library.

Level 3: Making definite the need of the library regarding the need of the matter for the library from supplying publishers, sellers and authors.

Level 4: Preparing plan for six sigma system.

Level 5: To see as to how control can be obtained on difficulties that arise in this system.





Level 6: Improvement is made by planning, analysis and control (Ulhe, U S & Patil S K, 2011).

Methodologies of Six Sigma in Library Perspectives

Six Sigma methodologies is a highly controlled management approach that promises the companies' such yardstick which would enable them to deliver best product and services and also to achieve higher profits with an increase in satisfied customer. Two types of methodologies are followed in all Six Sigma projects- DMAIC and DMADV or DFSS.

DMAIC stand for Define, Measure, Analyze, Improve, and Control. DMAIC is used to improve existing business process.

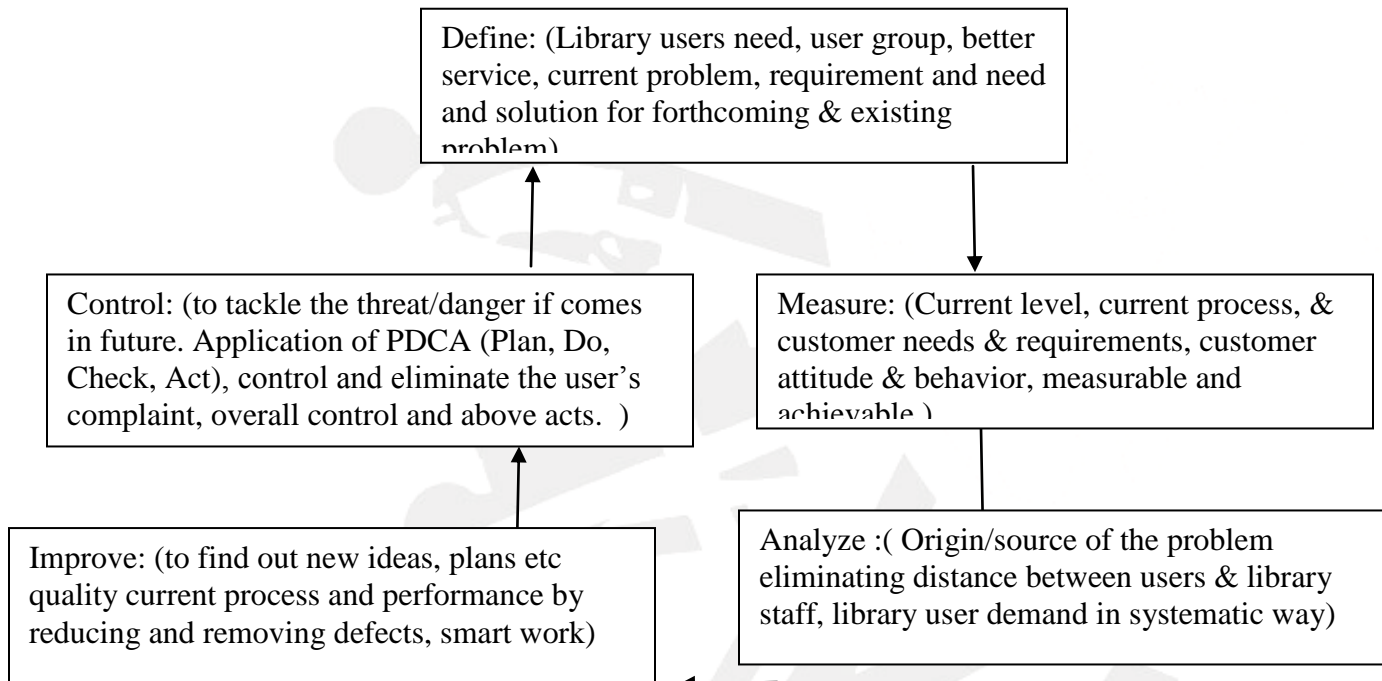


Fig1: DMAIC Cycle Method

First emphasize on “Define” the problem, the opportunity, process, project, goal, and the customer. The second one is “Measure”, which help you to decide current process and decide customer need and requirement. “Analyze” is the step which guide you to decide the origin and source of defect. The fourth step “Improve” is to improve the process





by eliminating defect/ performance/ current procedure/ standard of work. At last the finest step is “Control”, which makes you to look and take control all the above acts. DMAIC cycle method should repeat again and again for continuous improvements.

Define: This ‘define’ phase provides to know the existing problems, make us to have our own objectives and customer need and demands. Based on their requirement we can define and set the objectives and goal to meet their needs.

In general we can raise the following questions:

- Define library user’s needs?
- Define the better service to provide to library users?
- Define the user group of the library?
- Define the current problems, present and existing requirements for the library users?
- Define the solution for forthcoming and existing problems in the library?

Measure: The second stage of DMAIC process is “measure”. Measure the available sources and services in the library. Measure the attitude and behavior of user in the library. Librarian and library staff should have sound knowledge of user behavior and deed to serve them in better manner and to improve library service. Measurable and achievable target and goal should be set up to achieve better services and strategies. And this is what we have to do.

Analyze: In this step we have to analyze the origin of the problem. This step helps to minimize the distance between library employees and library users. So close relationship help to serve library users in a systematic way. Study the above steps analyze the result and identify what we have learned.





Improve: This stage make to improve the library condition from past to present and help us to do better in future. In this phase we can improve the procedure and try to find out the new ideas, plan, thought and ways to do better than the previous to attract the library users. This phase will help the library to improve the work quick and fast. As a result the library employee can save their time and improve their work and serve the library users in fastest and quickest way.

Control: The ultimate stage of DMAIC is 'control'. This step helps to review and update the process. It takes overall control of the above all stages or phases. Here it is essential to determine effectiveness, process and implementation. This process guides us to learn to control and eliminate the library user's complaints. This stage helps us to improve the efficiency of library employees (Ali-Al-Zubi, Ahmed & Basha, Imtiaz, 2010).

DMADV stand for Define, Measure, Analyze, Design and Verify, which is used to create new product designs or process designs. It is also called DFSS - Design for Six Sigma.

Define: This phase of six sigma identifies, determines and set the organization's goal in accordance with the customer needs.

Measure: At this stage the organization identifies and measure those factor that are critical to quality, exactly determine the customer needs and specifications, product capabilities and risk factors.

Analyze: Alternative processes are designed and analyzed to meet customer need along with the existing process.

Design: The best design or model implied from above phase is selected and customized for the organization.

Verify: Performance and ability of the selected design to meet customer need is verified (Ratan, Pardeep & Lal, Payare, 2012).





CONCLUSION :

Six sigma was introduced for manufacturing process, but for more than three decade its implementation can be seen in service sector also. Though, its application is not wide in Indian libraries on a wide scale, it would not be justifiable to say that this process is not useful in libraries. Some of the case studies show that it is equally applicable in libraries and can also produce good result. However requirement of expert is big necessity for the application of six sigma (Agrawal Pawan, 2011). The issue of six sigma training has also not remained of much importance due to mushrooming of several institutions providing training.

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