SIX SIGMA REFLECTIONS IN THE DIRECTION OF LIBRARIES: AN ORGANIZATION OUTLOOK

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ABSTRACT

Quality issues have always been quite challenging in service sector like library and in this context, derived from industrial applications, modern Quality Management Systems (QMS) can be extensively adapted and experimented within education system. Now the quality is no more a desirable strategy – it has become a survival strategy. A library is part of a service organization which delivers products personally to the customer. In industry, a company may look at defects in its final manufactured products where as in libraries services, a defect relates to falling "users satisfaction" and to develop the "quality" of the library. In this scenario, a Six Sigma approach can directly affect the needs if it is conducted wisely. Six Sigma is a powerful breakthrough improvement business strategy that enables companies to use simple but powerful statistical methods to define, measure, analyze, improve and control (DMAIC) processes for achieving and sustaining operational excellence. Doing things rightly and keeping them consistent is the basic fundamental idea behind Six Sigma. In library, to improve quality and to provide right information to a right user at right time and to provide maximum users' satisfaction, now it is the time to execute Six Sigma in libraries. This article is an effort to validate the exceedingly valuable role of managing practice like Six Sigma for libraries which are normally presumed to be in the domain of manufacturing and process industries. With this in mind, the present work has attempted to explore some aspects of Six Sigma in libraries.

Key Words: Six Sigma, Quality, User satisfaction, PPM, DPMO.

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1. INTRODUCTION

India has had a glorious past in the field of education and has produced world known scholars, writers and scientists. Presently too, the country is emerging as an educational hub and trends show that many universities are attracting scores of students from other parts of the world. The government policies have also been highly favorable and aim to create a technically qualified workforce on a massive scale. Libraries have always been committed to provide a high quality of services to its users. In the past, consuming more resources, buying more books, and moving to large premises are considered as improving quality. But that approach is not valid today. One of the good solutions to improve quality is to provide right information to a right user at right time. This requires a through change in the approach – an approach based on user requirements and user satisfaction. It is believed that this can be achieved by implementing any QMS. In such a scenario, libraries require an innovative supporting tool which helps in improving the quality of library system. People in industries from manufacturing to service are witnessing the growth of a strategic continuous improvement concept called Six Sigma. Six sigma as a quality tool has found place primarily in manufacturing industries where there are specific dimensions, which are measurable at every intermediate stage of manufacturing for making necessary measurements and analysis. In industry, a company may look at defects in its final manufactured products where as in libraries services, a defect relates to falling "users satisfaction" and to develop the "quality" of the library. This study is an initiative to explore Six Sigma DMAIC (Define, Measure, Analyze, Improvement and Control) methodology in libraries to "users satisfaction" and to develop the "quality" of the libraries

2. ORIGIN AND CONCEPT OF SIX SIGMA

The roots of Six Sigma as measured standard can be treated back to Carl Frederich Gauss (1977-1885), who introduces the concept of noble curve. Six Sigma originated as the quality improvement approach in 1980's with a goal of improving quality of products, goods and services. It was pioneered by Bill Smith, CEO, Motorola in 1986. Further the concept bloomed when Motorola publicized the success of Six Sigma in 1995; Allied Signals was one of the first companies to grab the concept of Six Sigma. Allied Signal is reported to have saved $ 175 million in bottom line revenues in 1990 themselves. However the final push to this movement was achieved when Mr. Jack Welch made Six Sigma a religion at GE. In India, Wipro was the

pioneer in implementing Six Sigma. In 1998-99, in its first year of implementing Six Sigma, Wipro recorded savings of Rs 4.40 Crores.

Sigma is a Greek letter representing standard deviation or the amount of variation within a given process (Behara et al., 1995; Goh and Xie, 2004). According to Harry and Schroeder (2000), Six Sigma is a powerful breakthrough business improvement strategy that enables companies to use simple and powerful statistical methods for achieving and sustaining operational excellence. It is a business strategy that allows companies to drastically improve their performance by designing and monitoring everyday business activities in ways that minimize waste and resources while increasing customer satisfaction. Park (2002) described that Six Sigma implies three things: statistical measurement, management strategy and quality culture. It is a measure of how well a process is performing through statistical measurement of quality level. It is a new management strategy under leadership of the top management that creates quality innovation and total customer satisfaction. It is also a quality culture and provides the way to do things right at the first time and to work smarter by using data information. It also provides an atmosphere to solve many CTQ (critical-to-quality) problems through team efforts. Statistical representation of Six Sigma describes quantitatively how a process is performing and the goal of Six Sigma is to design processes that do what they are supposed to do with very high reliability, ultimately producing very consistent products and services (Coronado and Antony, 2002). The numerical goal of Six Sigma is to reduce defects to less than 3.4 parts per million (PPM), also known as 'Defects Per Million Opportunities' (DPMO) and reducing cycle time and costs dramatically which impact the bottom line (McAdam and Lafferty, 2004).

3. APPLICATION OF SIX SIGMA METHODOLOGY IN LIBRARIES

Libraries are giving much concentration on quality service to focus on customer satisfaction. Quality service can be delivered if libraries improve its management efficiency. In general tailor made service will help to satisfy users. Tailor made service can be efficiently done through the process of Six Sigma (Ahmad and Imtiaz 2010). The figure 1 shows that firstly define the demand of the users then measure it, analyze the same, make in control and improve the quality then serve to users. Ahmad and Imtiaz (2010) have also defined that library is a place where vast of information is acquired, stored, classified and disseminated to its users at the maximum to

satisfy their needs. To achieve this task library should have quality management process in libraries.

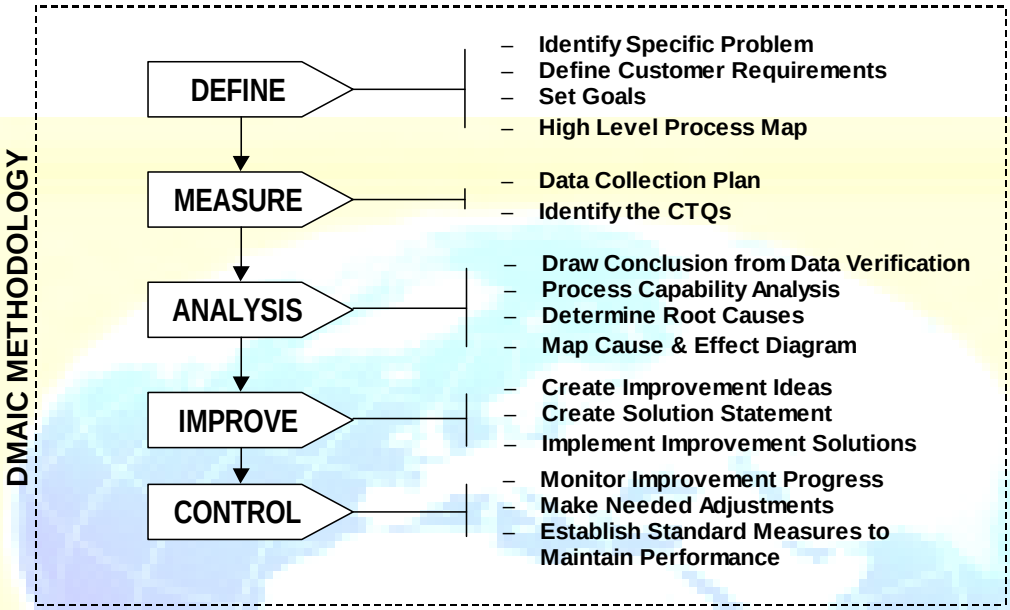

Figure 1: Six Sigma DMAIC Methodology

The Six Sigma methodology employs various tools and techniques for its implementation. The various methodologies are DMAIC (Define-Measure-Analyze-Improve-Control), DMAC (Define-Measure-Analyze-Control), DMADV (Define-Measure-Analyze-Design-Verify) etc. But, the most popular technique among all these methodologies is DMAIC due to its versatile approach. A team using DMAIC as shown in figure1, which stands for define, measure, analyse, improve and control, undertakes the project.

The whole concept of Six Sigma DMAIC is discussed in detail as under:

3.1. Define:

The defining of the problem is the first and the most important step of any Six Sigma project because better under-standing of the problem makes the job much easier later on during analysis (Kapur and Feng 2005).

This phase includes:

- Define the problem and define what the customer requires.
- Defines the project, and identifies critical customer requirements and links them with the business needs.

- Identification of types of resources required for the project.
- Preparation of project plan and formation of project team.
- Mapping the process in order to easily recognize the links between the steps.
- Defines the project charter and business processes to be undertaken for Six Sigma.

In libraries, the Define phase defines the following aspects (Ahmad and Imtiaz 2010).:-

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

3.2. Measure:

Identify the critical to quality (CTQs) characteristics of the process. This phase requires us to determine the factors that contribute to improve library services. During the measurement process the critical to quality (CTQ) characteristics which have an impact on the outcome would be selected. Once the CTQs are identified, surveys and interviews can be used to measure their effects. Data collection is the main emphasis of this phase. Measure the available sources and services in the library. Measure the attitude and behavior of the library users. Librarian and library staff should have sound knowledge about users' behaviour and deeds to serve them in a better manner and to improve library services.

3.3. Analysis:

The analyze phase examines the data collected in order to generate a prioritized list of sources of variation. In this point, data is analysed and the causes of the problem are discovered. Here, course of action is created to close the "gap" between how things work and how they should work to meet improvement goals. All root causes are analyzed and the most critical ones are fixed for improvements. In this phase, process capability analysis is done to find out the actual state of the process. The existing DPMO (Defects per million opportunities) or PPM (Parts per million) level which is the way to calculate the sigma level or yield of a process is determine using process capability analysis. Minitab software is used for analysis the data and it generates a process capability report, which includes a capability histogram overlaid with normal curve and the complete tables of capability statistics. After knowing the DPMO and sigma level of the

process using process capability analysis, a fishbone or cause and effect diagram is to be prepared. This process facilitates to diminish the distance among library employees and library clients. So, close correlation helps to hand out the library client in a efficient way (Susan and John 2006).

3.4. Improve:

The process is improved to remove cause of defects. The optimal solution for reducing mean is determined and confirmed in improve phase. The gains from the improve phase are immediate and are corrective in nature. Specific problems identified during analysis are attended in improve phase. This stage involves:

- Use of brain storming and action workouts.
- Process optimization and confirmation experiment.
- Extracting the vital few factors through screenings.
- Understanding the co-relation of the vital few factors.

This is the stage where the root cause of the problem is removed and the solution is standardized. The optimal solution for reducing mean and variation is determined and confirmed in improve phase. Efficient and systematic approach is indispensible to improve the library quality. This stage will full fill this requirement. This phase guide the library employees to work smart rather than work hard. Ultimately this helps to curtail the work and make best use of service to the library users.

3.5. Control:

Control the process to make sure that defects don't recur i.e. remove the root cause of the problem.. The control phase is preventive in nature. All the possible related effects of the specific identified problem from the analysis phase are tackled in control phase.

- It mainly defines control plans specifying process monitoring and corrective action.
- Ensures that the new process conditions are documented and monitored.
- This route points us to be trained to control and abolish the library users' complaints.

4. CONCLUSION

The aspiration of Six Sigma has shaped many encouraging outcome for many world class companies. The writer juxtaposes a relationship among the applications of Six Sigma in business

and in libraries. The intention of this paper is to grant a sound argument on Six Sigma application in industry and in libraries with Six Sigma DMAIC methodology and see how it hysterics in with worth and operational excellence initiatives from manufacturing to service part. Six Sigma helps to recover the standard of the library and helps to improve the skills and talent of the library employees. The ultimate goal of the library is to satisfy its users. This can be achievable by using Six Sigma. It helps library employees to have a better management to evaluate the services to library users. The study could be a paradigm initiative towards improvement in library system. Libraries that have embarked on a passage for nonstop perfection should execute Six Sigma for healthier grades.

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