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BUSINESS PROCESS MANAGEMENT AND PROSPECTIVE OF SIX SIGMA

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Abstract: As we know, due to the fast changing economic conditions, the companies are facing a huge impact or we can say reverberations in their ongoing processes. The major hiccups those are being faced by these companies/industries are declining profit margin as well as the demand of the customer for high quality product and product variety. In this manufacturing sector worldwide, six sigma is becoming very popular this makes it adventitious for improving the quality performance and the productivity and also to make the process robust to quality variations whereas in accordance with process management it particularly consolidates the performance/quality excellence into the strategic management of organizations. In this review paper, the relevance and prominence of process management and six sigma for the educational organizations will be examined .This paper presents a review of six sigma and process management implemented in the various sectors of the industries/companies.

Keywords -Six sigma, Business Process management, Strategic management.

I. INTRODUCTION

Somehow we'd wish to know that because of the surge in demand for the quality of the merchandise and thus the customer satisfaction and also to attenuate the continued errors as which may have a superb impact on the organization in accordance with their relationship with the community or we'll say as which may ultimately decline their importance globally. Six Sigma has developed and systematized many statistical and business tools while reducing costs, defects and cycle time of production, and at the time increasing market share, maintaining customers, development. It's program are often used at every stage of the assembly and administrative process (Zu, et al., 2008; Glasgow et al., 2010). Experts within the sector of quality developed process-management concepts and tools:

1. Dr. W. Edwards Deming (1900-1993) is known for his add Japan within the 1950s and theories like his Fourteen Points and Plan-Do-Check-Act (PDCA) Cycle (also referred because the Shewhart Cycle).He also refined and published other concepts and tools, including statistical process control. Many of Dr. Deming's theories are contained in his book, Out of the Crisis.

2. Dr. Joseph Juran (b.1904) also worked with the Japanese beginning within the 1950's. Some of his theories supporting process management are Juran's Trilogy (process planning, process control, and process improvement); Big Q (the quality department is responsible for quality) vs. Little Q (everyone is responsible for quality); and thus the standard Planning Roadmap. Juran's books include Juran's control Handbook and A History of Managing for Quality.

3. Dr. Kaoru Ishikawa, author of Guide to control, invented the cause-and-effect diagram and taught people involved in teams (quality circles) to ask what caused each effect.

4. Dr. Walter Shewhart, a statistician who worked at Western Electric, Bell Laboratories and who used statistics to elucidate process variability, first published his theories in his book Economic Control of Quality of Manufactured Product (1931).

Organizations should persistently enhance their functioning to remain fiercest. Yet, complications develop within the interpretation of master plan to actual business process, that is, the series of steps that succeed in some spadework (Kaplan and Norton 2001). Further, by brushing up business processes, the intellectual capital of the workers magnifies through added understanding of their role within the organization and through abolition of resource gaps (Herremans and Isaac 2004; Harrison-Broninski 2010). The comprehensive goal of Business Process Management (BPM) is to build on processes to boost satisfaction of customer value (see also Hammer 2010). BPM uses techniques to measure, analyze, and improve processes; however, there is no single body of knowledge or techniques that apply to BPM. Six Sigma provides useful techniques for BPM (Harmon 2010). This review paper presents the collective incentives that why recent technology advancements are generating an accelerated trend

to merge Process Management and Six Sigma to form an additional strong approach to feasible business performance improvement.

II. TRENDS IN BUSINESS PROCESS MANAGEMENT AND SIX SIGMA

(A)TRENDS IN BUSINESS PROCESS MANAGEMENT:

In 2000, Gartner speculated that Business Process Management (BPM) may possibly be suitable to become the upcoming big sensation. The "thought leadership" conveyed then has been bounced back in the present commerciality of business modelling. By 2004, Gartner has seen more valuable stretch from 15 percent of their client base to more than 35 percent on the other side of all businesses, despite of their cultural tendencies. In view of the fact that processes are the censorious paths to progressive business alternate, processes are approaching under intense scrutiny. In the opinion of Gartner, the necessity for process interpretation will create notable Business Process Management activity. Gartner anticipates a stand up tide that will steer a growing business modeling market, including such services and technologies as Business Process Analysis (BPA).

(B)TRENDS IN SIX SIGMA:

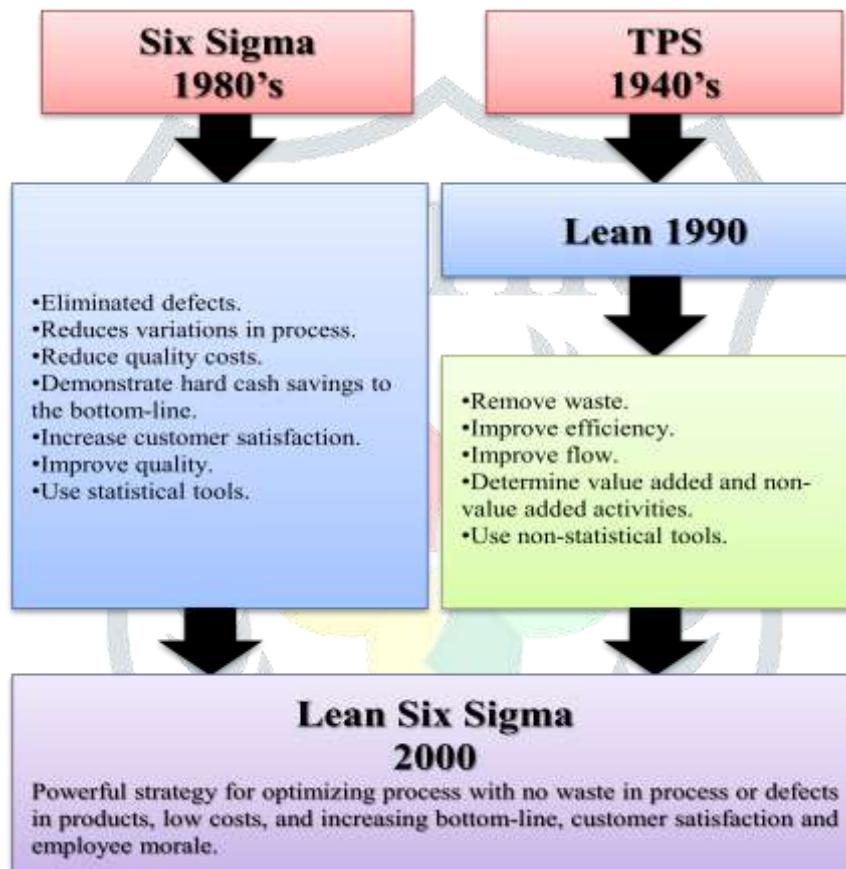


Fig.1. Lean and Six Sigma popularity and integration.

Six sigma basics are planned to upgrade manufacturing. This is a type of quality control that was initially evolved for enormous scale manufacturers. It was considered to amplify processes and abolish the amount of flaws found within them. The Lean method is a credo centered throughout abolishing waste and providing the best customer impression. As per the Lean manufacturing subject matter expert, there are around eight kinds of waste namely: defects, overproduction, waiting, non-utilized talent, transportation, inventory, motion, and extra processing.

II. DECISION MAKING WITH SIX SIGMA

The Six Sigma lets organization recognize issues and ratify assumptions, deliberate solutions, and plan for execution to avoid unanticipated consequences. By applying tools such as statistical analysis and process mapping to complications and solutions, team can imagine and predict results with a high level of accuracy, letting leadership make decisions with less financial threat. Once team executes changes, they can control process for a fraction of the cost of traditional quality methods by continuing the use of Six Sigma tools and statistics.

IV. TWO PERSPECTIVES OF SIX SIGMA PROCESS**(A) BUSINESS VIEWPOINT:**

In the business world, six sigma is explained as a ‘business strategy used to upgrade/improve business profitability, to enhance the effectiveness and efficiency of all operations to meet or to go beyond customer’s necessity and expectations (Antony and Banuelas, 2001). The six sigma approach was initially applied in manufacturing operations and quickly expanded to distinct functional areas such as marketing, engineering, purchasing, servicing, and administrative support, once organizations recognized the benefits. Especially, the global applications of six sigma were achievable thanks to the very fact that organizations were ready to articulate the advantages of six sigma presented in financial returns by linking process improvement with cost savings.

Table 1: Strategies, Tools, Techniques and Principles (Young Hoon Kwak, et.al, 2006) are shown below:

Strategies and Principles	Tools and Techniques
Project management	Statistical process control
Data-based decision making	Process capability analysis
Knowledge discovery	Measurement system analysis
Process control planning	Design of experiments
Data collection tools & Techniques	Robust design
Variability reduction	Quality function deployment
Belt system	Failure mode & effects analysis
DMAIC process	Regression analysis
Change management tools	Analysis of means & variances Hypothesis testing Root cause analysis Process mapping

(B) STATISTICAL VIEWPOINT:

Six sigma method has two crucial outlooks. The inception of six sigma arises from statistics and statisticians. Hahn et al. (1999), Hoerl and Snee (2002), and Montgomery (2001) consider the six sigma method from a statistical, probabilistic, and quantitative point of view. From the statistical point to look on, the term six sigma is described as having less than 3.4 defects per million opportunities or a success rate of 99.9997% where sigma is a term used to be regarded as the variation about the process average (Antony and Banuelas, 2002).

V. THE SIX SIGMA METHODOLOGY**(A) DMAIC PROCESS:**

DMAIC is a closed-loop process/operation that terminates unfruitful steps, often prioritizes on new measurements, and put in an application regarding the technology for steady improvement. Six Sigma particularly uses a five phase methodology, so-called DMAIC that seeks a fundamental formulaic perspective that defines an output as a function of the inputs, expressed as:

$$Y=f(X)$$

Where, Y is the process output that needs improvement and X is the input or root cause of the problem. DMAIC particularly stands for- Define, Measure, Analyze, Improve and Control. Each phase is compromised of numerous tools which are put forward to observe the root cause(s) of almost any problem.



Fig.2. Representing the DMAIC Tools.

(B)DFSS PROCESS:

Design for Six Sigma (DFSS) is a systematic methodology exploiting tools, tutoring and quantifications to empower the administration to design products and processes that adjoin customer expectations and can be turned out at Six Sigma quality levels (Mader D.M., 2002). DFSS is potentially or we can say possibly far more successful than DMAIC as its application is in the initial phase of recent product/process evolution, thus the paper under this status has in view to provide an clarification of DFSS and why it is different from DMAIC. The basic difference/dissimilarity lies in the fact that DMAIC refers to the methodology that initially focuses on the improvements that has to be made within the existing product and service of the administration/organization. On the other hand, DFSS seeks an importance on designing a new/fresh defect-free product or work to meet CTQ factors that will ultimately bring about the customer satisfaction.

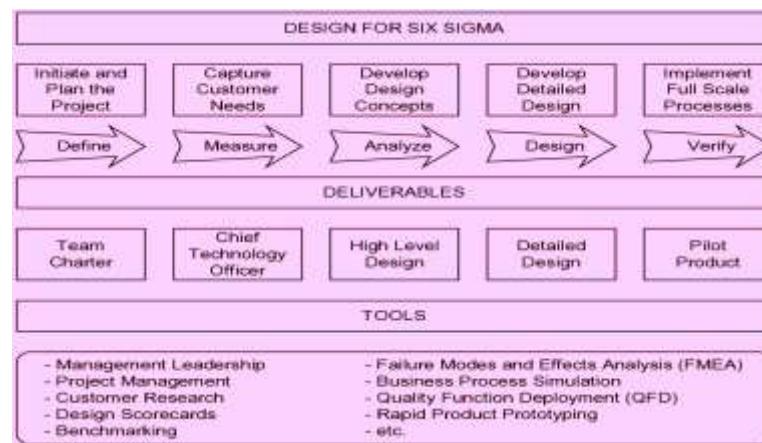


Fig: 3. Five step DFSS Process.

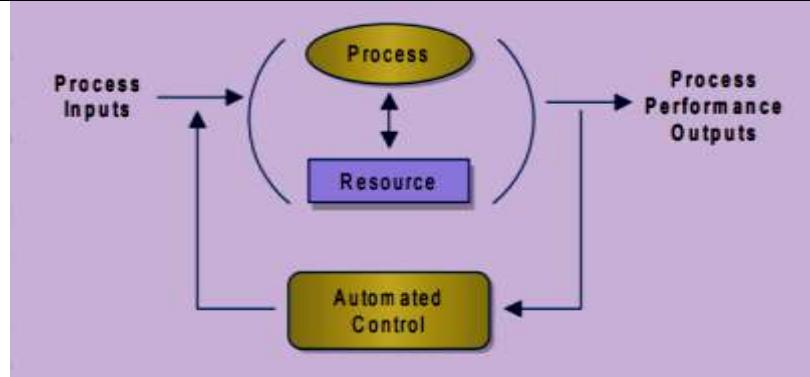
VI. BUSINESS PROCESS MANAGEMENT (BPM)

Business process management (BPM) is one of the most trendy/accepted business exercises nowadays, which is being investigated both in the business world and by the technological/research-based society. BPM has been evolved as a dominant management tool that helps organizations to emerge and create. This methodology contains designing/re-designing the business sense of the administration; modeling its implementation; execution; management; monitoring and changes needed to meet customers' needs to the considerable level. The main point of view of the BPM philosophy and the execution of its principles is mainly the satisfaction of customers' needs; for that reason, it can be stated that the BPM philosophy remains as a upcoming management philosophy. On the other hand, it (BPM) is a management perspective that deals with the functioning of an organization as a network of interdependent/linked business processes. With this approach, to enlarge/extend passion in an dynamic environment, various organizations partly or entirely swap traditional hierarchical organizational structures by centralizing them on processes. Meanwhile, traditional organizations are well-established on the basis of departments and functional silos; BPM locates organizations as networks or process systems. Business processes are a key unit of BPM that is concentrated on identification, discovery, analysis, redesign, execution, and monitoring as a body of methods, techniques, and tools. Thusly, the main motto/aim is to improve performance.

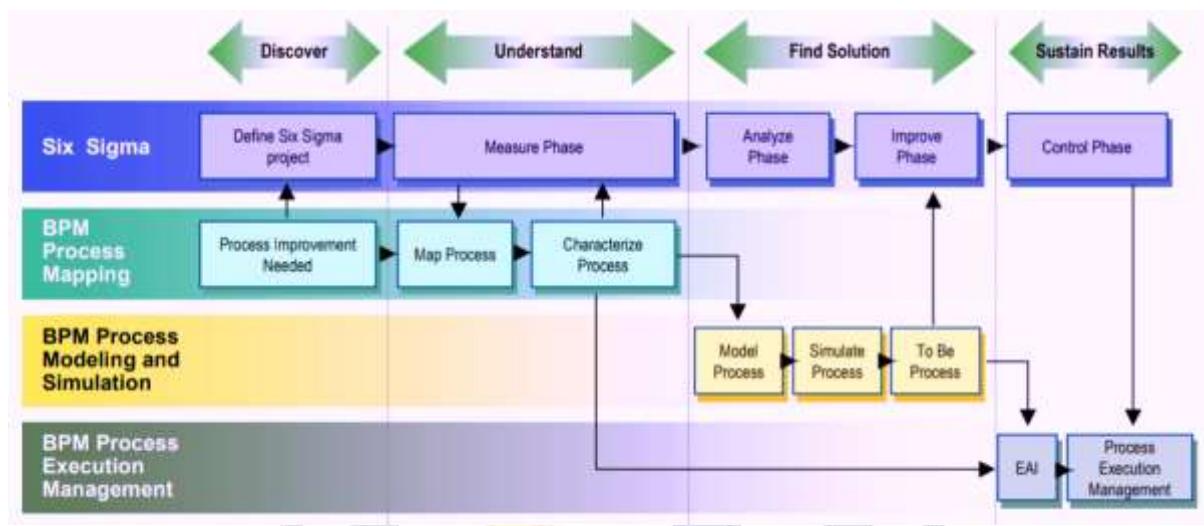


Fig: 4. Business Process Management.

We also need to take into consideration the PEM that is the Process Execution Management, while dealing with those concepts of BPM and Six Sigma. This PEM particularly uses or we can say includes computer monitoring of the process to modify all the elements that are present or comes under this Six Sigma or Process Management project into precisely run processes.

**Fig: 5.** Process Execution Management.

VII. INTEGRATING BUSINESS PROCESS MANAGEMENT, SIX SIGMA, AND PROCESS EXECUTION MANAGEMENT

**Fig: 6.** Interactions between BPM, Six Sigma, and PEM.

The relationships or we can say interactions between these methodologies and techniques are easy to think about. Six Sigma, along with its DMAIC point of view or an approach to problem solving, tends to be never-ending in terms of the phases that has been used. BPM tends to have stages/steps of finalization with potentially increasing levels of process or activity. PEM generally occurs after a process is fully specified /characterized. For instance, if your organization has commenced with BPM before starting Six Sigma, BPM assures where it is most favorable to apply Six Sigma. This is because Process Management provides the inspection of complicated areas of the business and incapable process outputs. For a while, if an organization has executed Six Sigma and then set in motion a BPM activity, as this BPM is a catalyst for enhancement. Implementing Six Sigma initially provides an admiration for the importance of process, the demand to organically discover Six Sigma projects and the need to carry on activities/processes for steadiness and predictability. Moreover, this PEM can be executed as a standalone process, or in combination with either Six Sigma or process management, or both. It naturally enhances the results/outcomes.

VIII. CONCLUSION

Since its initiation, Six Sigma has emerged from a product centric quality improvement methodology to campaign wide improvement system that preferably includes/contains a powerful/impactful methodology, computer sustained tools, and a magnificent management framework. Recent web empowers the technologies and various different methods to extract, analyze, and apply data to decision steps which has enormously helped to modify the ability for managing complex and demanding activities/processes. Due to this Process Management tools, and the problem resolving phenomenon or we can say methodology of Six Sigma, have adjoin to expand the efficiency, effectiveness, and proceeding control of a process/activities to that levels which were seemed unachievable in accordance with their performance. In the upcoming research scenario they must include or they must have a knee observation that how these Six Sigma practices are going to be adopted in various organizational situations, since various organizations have varying maturity levels of QM implementation and the plus points and weakness of their existing QM systems vary.

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