An Overview of 5Ds Model for Continuous Improvement

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Abstract: The nature of the management system is similar to human nature in many aspects. Human can get sick and dies, and influenced by internal and external factors, management systems as well, can get sick and are exposed to the problems that affect its efficiency and effectiveness. Just as the human diseases show through symptoms, there are also symptoms indicate the diseases in the management systems. hence, for these management systems to maintain their health and vitality there should be an effective medication system to detect any symptoms, diagnosis its roots, and develop robust treatment solutions.

This paper explains in detail the five stages (5Ds) of a conceptual model for medication of management system that systematically guides organizations to determine the problem or opportunities for improvement (OFI), diagnose of root causes or contributing factors, development of the required improvement actions, deploy the required changes and discipline or sustain the outcomes till to successful launch of the improvement project or event. This main contribution of this paper consists of the proposal of a novel methodology for continuous improvement and sustaining of Total Quality Management implementation in various organizations.

Keywords: Total Quality Management; continuous improvement; framework; management system

1. Introduction

Over the decades, as the need to continuously improve on a greater scale within the organization became an imperative, a number of CI approaches have developed founded on a basic idea of quality or process improvement, or both, in order to reduce waste, reduce defects, changing for better and improve quality. The best known of them are: lean manufacturing, six sigma, KAIZEN, the balanced scorecard, and lean six sigma (Nadia and Baghel, 2005). In Japan, ‘Kaizen’ or Continuous Improvement was introduced to many countries outside of Japan, by the book Kaizen. Kaizen became known as a distinctive and successful feature of the Japanese management style. The improvements under Kaizen are typically small and incremental changes that involve everyone, entail relatively little expense, and focus on constant improvement efforts. In the context of Kaizen, management has two major functions: maintenance and improvement (Imai, 1986).

The studies conducted by (Bessant and Caffyn, 1997; Conti et al., 2003; Joseph and William, 2004), state that the scope of CI (and also QM) has been subsequently enlarged far beyond its early, shop-floor, product quality orientation to focus on organisational excellence and wider business issues. As seen above, while some still maintain that limited scope, many authors consider that the nature of the CI concept has also evolved beyond Kaizen, to incorporate innovation or breakthrough change, enabling the users to cope with the rapidly changing nature of business competition.

However, Approaches to CI have been cited under several names, such as methods of continuous improvement or CI approaches (ASQ, 2007), business process improvement methodologies (Bendell, 2005), quality approaches (Marash et al., 2004), management tools (Rigby and Bilodeau, 2005), management techniques (Staw and Epstein, 2000), business and management ideas (Greatbatch and Clark, 2005), and some authors called them management fads and fashions (Miller and Hartwick, 2002; Gibson and Tesone, 2001; David and Strang, 2006; Carson et al., 2000). The nature of such improvements can be divided into two kinds: Incremental and Breakthrough. Incremental improvements are generally achieved through changes in and by an organisation’s infrastructure (e.g. people, systems, values and behaviour), while breakthrough improvements are generally focused on major structural changes (e.g. equipment, facilities, sourcing) (Hayes et al., 2005). CI methodologies are grouped by Shankar (2010) into three groups,

1. Problem solving and continuous improvement methodologies: PDCA/PDSA and DMAIC are essentially similar systemic approaches to solving problems that build upon the basic
principles of the Scientific Method. A myriad of specific tools (statistical, logical, or simulated) may be applied depending on the need or the sort of problem that requires resolution.

2. Breakthrough design and reengineering methodologies: DMADV, TRIZ, and Benchmarking are all techniques focused on dramatically improving a process, product, or the current way of thinking. These techniques usually result in breakthrough improvements.

3. Efficiency methodologies: Lean and Theory of Constraints both have the goal of increasing efficiency and maximizing the use of resources.

As a result of the complications that faced by the organisations during implement TQM philosophy, a number of models have been suggested over the decades, to guide organisations toward sustainable results. However, many of these methodologies, they tend to be complex and too strict, rather than being a simple and general guide (Yusof and Aspinwall, 2000). Hence this paper presents a novel methodology for continuous improvement called Management Systems Medication (Medication of management Systems Methodology). It will present the detail steps of the 5Ds approach through the integration of continuous improvement tools, innovation, process improvement and project management into one effective approach.

The main aim of this paper is to show how the effective implementation of the 5Ds approach will lead to superior opportunities for businesses to achieve sustainable excellence through a robust, rationale, systematic and practical approach.

The suggested continuous improvement process CIP (5Ds) covering all relevant steps from determine the problem or OFI, diagnose of root causes or contributing factors, development of the required improvement actions, deploy the required changes and discipline or sustain the outcomes till to successful launch of the improvement project or event. Figure 1 show the 5Ds process improvement steps.

2. Continuous improvement process (CIP) stages

The CIP is particularly dependent on such characteristics as the type of improvement, the type of organisation or the internal arrangement, so there are many ways to implement the required improvement. However, some common steps of continuous improvement process (5Ds) may include: determine, diagnose, develop, deploy and discipline. Figure 2 represents the detailed flowchart of 5Ds steps to apply the continuous improvement process.

![Figure 2 Flowchart of 5Ds steps](image)

2.1. Determine: The main activities in determine phase is to identify and/or validate the opportunity for improvement form any sources such as self-assessment, performance evaluation, audit results, employee suggestions or any sources for improvement. develop a project/event charter. The organisation should state the description of the problem and include data about the size of the problem and its impact on customer, system, profit or other issues. The scope of the project, together with the objectives that should be realized at the end of the project, should be clearly defined in both operational and financial terms. A project charter is a written document states more than or some of: business Opportunity (problem), source of the problem, team charter, project Scope/objective(s), team charter, project duration, business case.

2.2. Diagnose: The main objective in diagnose phase is to identify and/or validate the root cause(s) and or contributing factors, by identifying critical measures, developing a methodology to effectively collect and analyze the data to come with validated root causes of the problems, identified gaps between
baseline performance and targets, understand root sources of variation, and to prioritize improvement opportunities. Tools used in this stage, as appropriate, may include but not limited to: 5-Whys analyses; cause and effect diagrams; SWOT, PESTLE, 5 Porter forces, FMEAs, hypothesis tests; ANOVA; regression and correlation analyses. The self-assessment tool suggested in section 5.3.3 of this study can be considered as one of the diagnostic tools for improvement.

2.3. Develop: The purpose of this stage is to determine, evaluate, and select the right and robust improvement solutions. The main activities to be considered during this stage are to generate solution ideas, determine solution impacts, evaluate and select solutions, identify any barriers that will prevent the selected solution from being implemented, and overcome them. Tools used in this stage, as appropriate, may include but not limited to: solution selection matrix; benchmarking, TRIZ, mistake proofing; DOE, Taguchi method; FMEA, force field analysis.

2.4. Deploy: The deployment stage is the critical stage at which the improvement initiatives must deliver results. In this stage the plans are translated into actions. Once that stage three has been concluded, the organization can then propose and deploy an action plan, this can include define improvement actions; transform these improvement actions into an improvement program; implement, assess and refine the results obtained. Assessment and refine is related to measuring improvements against the performance excellence key performance indicators such as return of investments, saving operational costs, and productivity measures and to implement any refinement actions. The deployment can be in pilot project first depend on the improvement project.

2.5. Discipline: The main objective in discipline phase is to establish sustainable solutions, standardization opportunities/processes, and develop related plans to ensure sustainable performance over the long term. An on-going reviews depending on each particular project and improvement initiatives should be conducted on to assure consistency and to sustain improvements in the medium and long terms. The main activities may include but not limited to: identify if additional solutions are necessary to achieve goal, identify and develop replication standardization opportunities, integrate and manage solutions in daily work processes, integrate lessons learned, identify teams next steps and plan for remaining opportunities, project closing (departing) activities.

The project closing activities include handed over the project/event deliverable to the process owner and project Sponsor, and to the area in which the process exists, after the required improvement activities has been confirmed, evaluation or effectiveness of action taken should be carried after appropriate period of time, recording of lesson learned and recommendation, a final report should be written and circulated to interested parties, finalizing the calculation and evaluation of cost saving and other achievement, team recognition and recommendations.

3. Strength and weakness of 5Ds model

In the comparison between 5Ds and other CI methodologies such as kaizen and six sigma derived from Natcha (2007) and the feedback from such case studies implemented there are various strengths and weaknesses related to 5Ds model were determined as shown in Table 1.

| Strengths | Weaknesses |
|-----------|
| 1. Robust, rationale, systematic and practical approach for continuous improvement. | 1. Lack of standard training programme for 5Ds |
| 2. Give a complete overview of organisation and Address the overall management system | 2. New fad and need time to be well-known as improvement methodology and framework |
| 3. Powerful tool to improve process performance and all other management system elements | |
| 4. Clear relevance to operational processes and all business aspects | |
| 5. It can be useful for all type of improvement from small events to breakthrough improvement and transformation program | |
| 6. Business results oriented and benefits generated clearly measurable | |
| 7. Unlimited strategic perspective | |
| 8. able to link with several varieties of tools (comprehensive quality tool box) | |
| 9. powerful in diagnoses of problems (root causes analysis) and developing of robust and innovative solutions before | |

Project Closing (Departing) Activities
5. References


