

Necessity of Six Sigma– As a Measurement Metric in Measuring Quality of Higher Education

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ABSTRACT: *The benefits of having a common metric for quality facilitates easier comparison of performance across Institutions and helps in Bench Marking to achieve higher goals. It also helps in comparing the functions of various departments within the Institution. The paper reviews the existing methods and approaches of measuring quality in higher education, perception about Quality relating to higher education from the published literatures. This paper brings out the necessity of having a common metric in measuring the Quality of Higher Education by adopting Six Sigma approach, embraced by the Industries across the world, in achieving improvement to process and product quality.*

KEYWORDS: *Six Sigma, Higher Education, Quality Metric*

I. INTRODUCTION

Quality is a measure for the function of a product or process in achieving the desired goal. Measure of Quality helps in evaluating the performance of either the product or the process and also in setting the higher level of goals as targets to achieve continuous improvement. The measurement of quality also helps in comparing the performance of various departments within an organisation or Institution. To achieve these objectives, if measurement metric for quality is common, then it would be helpful in comparing and Benchmarking performance of one function or department or business with other. For example, the common measurement metric of quality is highly helpful in comparing the performance of finance department with marketing or production or R&D departments easily. One Such common measurement metric for Quality is Six Sigma. A brief over view of Six Sigma as a quality metric, its origin and development as a business model has been detailed in section 2. Attempt has been made by reviewing the literatures on understanding the various approaches, measurement metrics and interpretation of quality in higher education of Academic Institutions in section 3 of this paper. In Section 4 of this work, need and benefits of having Six Sigma as a common metric for measurement of Quality is brought out.

II. AN OVERVIEW OF SIX SIGMA

Six Sigma remained as a statistical term till 1987, rather than as it is popularly known today, either as a “Quality Management” or as a “Change Management” approach or as a “Business model” in impacting the Process and Product Quality of Business under the current scenario of Globalisation. The origin of Six Sigma as a business model can be traced back to 1985 and the crusade started at Motorola. Michel Harry who pioneered and led the efforts of Six Sigma as a methodology and structure in resolving business issues is regarded as God Father of Six Sigma.

However, till 1995, Six Sigma did not get the lime light till GE’s former Chairman – Jack Welch announced Six Sigma as a business wide initiative in GE and demonstrated the benefits of embracing Six Sigma, to the world [1, 2]. The strategy and uniqueness of Six Sigma is that, it talks of a common language related to Quality – be it with Engineers, finance professionals, administrative personnel and others, hence aligned the goal of the organisation towards a common target across functions & departments. The objective and end purpose of Six Sigma is focussed on Customer in achieving customer delight. Six Sigma found its application as a business model or a strategy, hence applicable to all processes of a Service / Process Oriented organisation like Hospitals / Call Centres to product and Research oriented Engineering Organisations, or simply anything related to an activity, where there is an exchange of thought / process. Hence, it would not be a surprise, if Six Sigma makes a huge impact if adopted in Higher Education Institutions to their processes and approaches.

The key in Six Sigma approach / strategy is, defining the defects produced in a process / product and the consequent customer dis-satisfaction leading to loss of business or opportunity in the market place. Six Sigma as a business model adopts a two pronged approach. One is the most familiar DMAIC (Define, Measure, Analyse, Improve & Control) approach – which precisely concentrates on defining the current level of defects produced in a process or in a product. Then, it proceeds to analyse the current level of Quality status, defines the strategy to shift the needle towards defect reduction by optimum utilisation of resources, without making any investments to achieve “process entitlement”. This strategy results in adoption of changes, improvements or innovations to the process as appropriate. It is a known fact that “Six Sigma” refers to 3.4 defects in 1 Million Opportunities, be it a process or a product function etc.

However, if we refer to any organisation’s process that it has achieved “Process Entitlement” means, the current level of process is at 4.5 Sigma. When the process achieved “Process Entitlement” implies that any further improvement is the process alone is not likely to deliver significant improvement in Quality of deliverables / outputs and hence calls for implementation of Design or process or both design and process change, which can be achieved by embracing other prong of Six Sigma approach, known as DFSS (Design for Six Sigma) to achieve the level of Six Sigma Quality.

III. METRICS IN MEASURING QUALITY IN HIGHER EDUCATION:

Measure of Quality in Higher Education, is a tricky thing to compare between Institutions or various departments within an Institution, in the absence of a common metric. Confusions on customer or stake holder is one thing - either it is the Industry or Society or parents, another ambiguity is on definition of the product or produce like students or the process of education curricula itself. Analysis of literature for the purpose of bringing clarity on what is quality in higher education means and its measurement metrics, resulted in various measurement metrics for Quality and the definitions for Quality in Higher Education itself appeared to assume different views. Defining Quality in higher education is difficult and engages many difficulties due the complex character as found from literatures

Harvey & Green [3] described Quality in 5 dimensions i) Quality as exceptional – relating to excellence, ii) Quality as perfection or consistency (aimed at process & consistency) iii) Quality as fitness for purpose (meeting the requirements / Customer expectations /functional need) iv) Quality as Value for money (Relating to cost – Least cost with best features) v) Quality as Transformation (Change Management – Empowerment in execution etc)

Shrikanthan [4] grouped the stake holders into 4 buckets and linked the correspondence amongst them. i) Providers (Funding Bodies, Society at Large) – Quality is value for money ii) Users of Product (Students – Current & future) – Quality is Excellence iii) Users of Output (Employers) – Quality is fitness for the purpose (Employability) iv) Employees of the Sector (Administrators, Faculty and other Staff) – Quality is Consistency

Van Kemenade[5] groups values and standards under 4 Quality Management System i) Control ii) continuous improvement iii) Commitment and iv) Break through.

Athiyaman[6], Shemwell[7], Martensen[8], Sureshchandar[9], Bigne[10] & Ham [11] linked education as service sector and Quality as Student Satisfaction, may or may not with measurable metric.

Interestingly Suhre[12] brought out the relation of satisfaction to academic accomplishment and also to drop outs.

Tim[13] brought out the critical factors in customer satisfaction and Kim [14] argue for customer satisfaction in higher education with financial implications.

IV. NEED AND BENEFIT OF COMMON METRIC FOR MEASURING QUALITY IN HIGHER EDUCATION

From the extensive literature survey as detailed above brings out clearly that there is no common metric in measuring “Quality” of higher education. Presence or adoption of common measurement metric for quality like Six Sigma results in

- 1) Comparing the Institutional performance which offers higher education and similar programs. This helps in Bench Marking of Institutions.
- 2) Setting-up performance goals toward achieving higher targets based on the current level of Performance. This benefits continuous improvement Initiatives within an Institution, as target level of performance is well defined and understood, across functions and departments without ambiguity
- 3) Helps in setting-up of Bench Mark goals towards achieving higher standards, for the Institutions to perform at higher level by comparing their current level of performance to the target level as the measurement metric for Quality are common.
- 4) Brings clarity in stake holders, customers, outputs and process. Ambiguity is eliminated.

V. SUMMARY AND CONCLUSION

From the literature survey, it can be concluded that there is no common metric for measuring the quality of Higher Educational Institutions exists at present. Adoption of Six Sigma as a measurement metric shall largely help in achieving higher level of performance by Setting realistic goals and Bench Marking based on a common measurement metric.

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