Kaizen Approach for Enhancing Quality Management Practices in HEIs

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Introduction

Service sector has experienced significant growth over the past several decades and it accounts for a substantial share in Global economy (Su et al., 2006). Even in underdeveloped countries, the service sector still accounts for a substantial part of their economies. The service industries have not only grown in size, but along the way, these have absorbed all the jobs rejected by traditional industries such as agriculture, mining and manufacturing. If we give a closer look, we will find that the education sector in one way or other resembles the service industry because it is intangible, perishable, gives heterogeneous output and carries production and consumption (of knowledge) in parallel. In today’s world of globalization Quality has taken a centre stage due to continues competition among institutions, emergence of new technologies and the knowledge driven economy. Education sector which is considered one of the most dynamic today needs a tool to create, monitor and improve quality of its each deliverable and delivery processes. On this front, many developing countries formally recognized the importance of higher education and committed itself to the development of manpower by providing full policy support and substantial public funds to create one of the world’s largest network systems of higher education system (Naik, 2004). In this necessity of the education sector can be very well fulfilled by the introduction of Kaizen, Lean and Six-Sigma concept in education sector. Competitive marketplaces require people at all levels in an organization to think of ways to continuously improve the products or services that they deliver to customers. Organizations that succeed in improving the value proposition for customers usually become the supplier of choice, in preference to other suppliers that, for whatever reasons, are not able to improve. While most managers and employees support the general notion of continuous improvement, the specific approaches to continuous improvement tend to be ad hoc or complex. While these approaches to continuous improvement may be successful on occasion, they are not usually responsive to ongoing changes in customer’s wants & needs.

Quality in Higher Education

What does quality mean in the context of education? Many definitions of quality in education exist, testifying to the complexity and multifaceted nature of the concept. The terms efficiency, effectiveness, equity and quality have often been used synonymously (Adams, 1993). Considerable consensus exists around the basic dimensions of quality education today, however quality education includes, learners who are healthy, well-nourished and ready to participate and learn, and supported in learning by their families and communities; environments that are healthy, safe, protective and gender-sensitive, and provide adequate resources and facilities; content that is reflected in relevant curricula and materials for the acquisition of basic skills, especially in the areas of literacy, numeracy and skills for life, and knowledge in such areas as gender, health, nutrition, HIV/AIDS prevention and peace.; Processes through which trained teachers use student centered teaching approaches in well-managed classrooms and schools and skilful assessment to facilitate learning and reduce
Establishing a contextualized understanding of quality means including relevant stakeholders of an institution. Key stakeholders often hold different views and meanings of educational quality (Motala, 2000; Benoliel, O’Gara and Miske, 1999). Indeed, each of us judges the education system in terms of the final goals we set for our students our community, our country and ourselves (Beeby, 1966). We defined education as a provider of services. Its services include advice, tutorial, assessment and guidance to pupils and students, their parents and sponsors. The customers—the stakeholders of the service—are a very diverse group and need identifying. If quality is about meeting and exceeding customer needs and wants, it is important to be clear whose needs and wants we should be satisfying. It is important to say something about the idea of ‘customer’ in the context of education. To some educationalists ‘customer’ has a distinctly commercial tone that is not applicable to education. They prefer to use ‘client’ instead. Client, with its connotations of professional service, is seen as more appropriate. ‘Stakeholder’ is another term often used in this context. Others reject all such language and would rather stay with ‘pupil’ or ‘student’. Language is important if an idea is to be acceptable. Some people would make a distinction between clients, who are the primary beneficiaries of the education service, and customers, who pay for it but who may be once removed, such as parents, governors, employers or government. The diversity of customers makes it all the more important for educational institutions to focus on customer wants and to develop mechanisms for responding to them.

It can be helpful to make distinctions between:
- primary customers—who directly receive the service;
- secondary customers—such as parents, governors, sponsoring employers of vocational students, all of whom have a direct stake in the education of a particular individual or in a particular institution;
- tertiary customers—who have a less direct but nonetheless crucial stake holding in education, such as future employers, government and society as a whole;
- Internal customers—who are the employees of the institution and who have a critical stake holding in the organization’s success.
- The needs and views of the various customer groups, whether they are internal or external, do not always coincide, especially in large and complex institutions, although the conflict can equally be present in small ones. Potential and actual conflicts of customer interest will always exist. One of the best methods of resolving different interests is to recognize their existence and to look for the core of issues that unite the various parties. All stakeholders need to have their views listened to and to be treated fairly. Quality and justice go hand in hand. This is particularly the case when dealing with complaints, which are instances of those critical incidents where it is possible to judge how committed an institution is to a customer-first approach. It is often difficult to ensure that the primary customers’ views are paramount. There are strong forces pulling against it, not least those that can be exerted by funding processes and mechanisms. Where the needs of the learner and funding mechanisms collide, it is very difficult for an institution to put its learners first. This is particularly the case where funding mechanisms emphasize efficiency that can only be achieved at the cost of quality. (Adams, 1993).
Kaizen Models in Enhancing Quality in HEIs

Kaizen is a Japanese word that has become common in many western companies. The word indicates a process of continuous improvement of the standard way of work (Chen et al., 2000). KAIZEN is a system of continual undertaking by an organization to improve its business activities and processes with the goal to always improve quality of education so that the universities can meet their full potential. In simple terms Kaizen is a Japanese term for ‘a change for better’, which results in ‘continuous improvement’. Kaizen ideology can be traced back to the 1980s; Kaizen was first adopted in the West with the influx of Japanese car manufacturers who brought a wave of new thinking. Although Kaizen events have been growing in popularity since the mid 1990s, to date, there has been much systematic empirical research on the determinants of Kaizen event effectiveness. Kaizen logic was first enshrined in written text with Masaaki Imai’s book ‘KAIZEN - The Key to Japan’s Competitive Success’ (1996) this book showed what the fundamental Kaizen logic is. Kaizen uses the Japanese logic of bringing improvements internally from within the workplace. In his Kaizen: the Key to Japan’s Competitive Success published in 1986 that introduced Kaizen to the Western corporate world, Masaaki Imai defined it as: “a means of continuing improvement in personal life, home life, social life, and working life. At the workplace, Kaizen means continuing improvement involving everyone—managers and workers alike. The Kaizen business strategy involves everyone in an organization working together to make improvements without large capital investments.”

KAIZEN is a system of continual undertaking by an organization to improve its business activities and processes with the goal to always improve quality of products and services so that the organization can meet full customer satisfaction. In the use, Kaizen represents the element of continuous improvement that is a fundamental part of the Quality Model for leading a company to commercial success. In a business context, it is expressed in all activities, personal and teamed, that develops and uses learning to make processes better at satisfying customer requirements. In this use, Kaizen has its origins in the fifth of W. Edwards Deming’s 14 management points: “Improve constantly and forever the system of production and service” (Deming, 1982). It is commonly expressed as “continuous improvement.” Deming represented continuous improvement as the repeated application of the cycle of Plan, Do, Study, Act (PDSA) to all activities of higher education institutions in the pursuit of making them ever better in delivering value to customers. Its use as a business strategy inside the United States is usually incorporated under the adoption of Deming’s Quality model (e.g., as part of Total Quality Management) or as an element within the Lean Enterprise model described by Womack and his associates (Womack, Jones, and Roos, 1991; Womack and Jones, 2003). Outside the United States, the term kaizen, on its own, more frequently refers to a comprehensive companywide management program best represented by the work of Masaaki Imai (1986). This program establishes a culture focused on the continuous improvement of all processes and work places through the elimination of waste. As stated by Imai, this use of kaizen means “everyday improvement by every person, everywhere” (Imai, 2010). The creation of this culture begins at the top with management. Every manager model teaches the commitment to continuous improvement by applying it to his or her role and to the systems and processes he or she controls. It spreads across the various functions that constitute a business —executive, administrative, and operational. It is owned by every individual who, as with each manager, seeks ways every day to improve the performance of his or her role and who participates actively in the improvement of the work processes the worker implements and the work places he or she operates within. When used
in this manner, the term kaizen umbrellas many other concepts and tools such as customer orientation, total quality control, Quality circles, suggestion systems, standardization of work, cooperative employee management relationships, total productive maintenance (Imai, 1986). While Imai identifies Japanese management culture as the origin of this approach, in fact it mirrors precisely, but incompletely, the teaching of W. Edwards Deming who these very concepts brought to the leaders of Japanese industry in the early 1950s. He also elaborated the rationale for this approach to business success in what he termed his “system of profound knowledge.”

Kaizen understands waste to be any activity that is not value adding from the perspective of the customer. Work is value adding when it is done right the first time and materially changes a product or service in ways for which a well-informed and reasonable customer is willing to pay. Kaizen attracts and develops people who are capable of creating and sustaining high performance. By its nature, it draws to it people who are achievers by heart —people who are internally driven to make a difference, to perfect something. These people are focused on their work, frustrated by waste, and delighted by the opportunity to improve what they are about so that it excels. Their pursuit of excellence is only excited more with each step toward its achievement. Equally important, Kaizen attracts people who also are inclusive in their thinking and doing. Kaizen, as we implement it, demands a broad view of the connection of an activity to all activities that surround it and so, in its fact-finding steps, it describes the context within which the target work process operates. It also constructs its teams to include people who speak from the different perspectives that populate the workplace, and it pursues its solutions with openness to every voice. People who find Kaizen a gratifying experience are not only pioneering in their attitudes but also inclusive in their disposition (Vitalo, Butz, and Vitalo, 2003). The kinds of people that Kaizen attracts and develops are the heart and soul of high-performing organizations. The broad and sustained application of Kaizen can lead to a rapid emergence of the central element needed for a company to become high performing.

**Lean Principles**

The origins of Lean practices date from late 19th and early 20th century industrial engineering. Lean practices have evolved over the decades since then to become much easier for non-specialists to understand and use. It is now common for people with backgrounds and interests far from industrial engineering to become highly competent Lean management practitioners. Therefore, the Lean management system has the benefit that everyone in an organization can apply the practices without the need for specialists. Seminal work in the application of Lean to academic processes was done by Prof. M.L. “Bob” Emiliani when he was at Rensselaer Polytechnic University in the early 2000s and is described what individual faculty can do to improve their courses and delivery using Lean principles and practices. Teams of faculty, staff, administrators, students, alumni, and employers can participate to improve their courses using kaizen (Emiliani, 2005). The application of Lean management in any organization is the recognition and daily practice of the Lean principles: "Continuous Improvement" and "Respect for People." The "Respect for People" principle is almost always ignored by senior management, resulting in zero-sum (win-lose) outcomes for people and inferior results. In other words, one party gains at another party's expense, and the losers are much less willing to participate in continuous improvement. This outcome impedes teamwork and information flows, and discourages daily efforts by administration, faculty, and staff to improve processes. In order to function properly, Lean management must be understood and
practiced in a non-zero-sum (win-win) manner. It is not up to the discretion of senior administrators to ignore the "Respect for People" principle. This principle is required in order to sustain continuous improvement.

**Impact of Lean in Higher Education**

The impact of Lean in higher education can be profound. Substantial improvement in a variety of processes has been achieved compared to the condition prior to improvement. Double and triple digit improvements are achievable in most processes with the first round of improvement. Additional significant gains are achievable if improvement is continuous rather than sporadic. The benefits include lead-time reduction, increase in throughput, lower cost, increased student satisfaction scores, etc (Parasmal, 2009). Lead-time reduction includes less time for assessment and evaluation feedback. Reports analyzing Lean in higher education indicate that Lean principles are being successfully applied. Various Higher education stakeholders will likely perceive their organization to be substantially different or possess unique characteristics compared to other service organizations or businesses using Lean management. While its origins are from industry, not academia, Lean management can be successfully applied to any organization. The challenge is for Higher education administrators, faculty, and staff accept the need for and benefits of process improvement; to better comprehend the Lean principles "Continuous Improvement" and "Respect for People;" to comprehend and practice non-zero-sum management; to engage in daily improvement (versus periodic improvement efforts); and to shift from a "results" focus to a "process + results" focus.

**Five's Model in Higher Education Institutions**

The intent of 5S is to have only what you need available in the workplace of education institutions, a designated place for everything, a standard way of doing things, and the discipline to maintain it. Created in Japan, the 5S’s are: seiri, seiton, seiso, seiketsu, and shitsuke. Translated in to English, we have:

![Kaizen 5S model](http://crollproductivesynergy.com/StandardizationOfWorkflowProcesses5S)

**Figure 1**: Kaizen 5S model.
• Sort - remove all contents and materials from the workplace that are NOT needed for current programs.
• Set in Order - arranging needed content so that they are easy to find and put away. Items used often are placed closer to employee.
• Shine - making sure everything is clean, functioning, and ready to go.
• Standardize - the method you use to maintain the first 3S's.
• Sustain - making a habit of properly maintaining correct procedures.

For a higher education Institution, this creates fewer defects, less waste, fewer delays, less attrition, and fewer dropdowns in student academic performance. These advantages translate to lower cost and higher quality of education. For the employees, the 5S's create a superior working environment. They give the employee an opportunity to provide creative input regarding how the workplace should be organized and laid out and how standard work should be done. Operators will be able to find things easily, every time. The workplace will be cleaner and safer. Jobs will be simpler and more satisfying with many obstacles and frustrations removed.

PDCA Model

In compliance with current vision of higher education institutions the process of raising education quality at the basic education level includes teaching/learning processes that encourage systematic thinking with emphasis on real practice. These are relevant to the ‘academic performance’ which serves as a valuable primer for prospective team; such as administrators and administrative committees. These educator bodies work toward effecting change in an orderly, efficient, and effective manner (Fred and Allan, 2004). For the frameworks of ‘Academic Administration’ tasks, there are five undertakings as follows:

1. Academic Planning
2. Curriculum Design
3. Instruction capacity
4. Supervision and Instruction Improvement
5. Evaluation of Academic involvement

The first step is action of a cultural nature of administration, P= plan which is usually operational in every organization and task. Planning must be clear, accurate, and complete through every academic principle and should be systemic. The second step is leading the plan in to practice or doing the following plan according to the purposes and along the short and long working period of each plan. Particularly, only carry out the plan if one knows that it will be effective. Then evaluation and benefit checking for both are important processes for the plan. C-Check is the step for comparing between P-plan and D-doing, by evaluation and checks all learners, teachers and school administrators. This step checks the working result level. If higher than assigned P-plan, it shows that it has reached the set goals. If it is lower than assigned P-plan, it shows that it is not able to reach a set goal. After three steps of P-D-C, one will get an evaluation result to A- action or adjustment step. If this result is higher than the assigned goals then adjust the goals higher for the next operation for it to be challenging. The effective process to control both the internal and external educational quality in
educational administration is confirmed as PDCA theory-in-use, to ensure improvement of educational quality and standards at all levels of educators (Figure 2). For the current situation and working with the real state of problems for the educational administration among the Thai students; in the midst of worldwide changes and violence. In a lot of educational research educators found that often proved results; revealed these causes are related to the effect and reflection; by the system of educational administration within the field of ‘academic administration’ (Ho and Wearn, 1996).

![PDCA Cycle](image)

**Figure 2: PDCA Cycle.**

On the other side one would refer to the educational standards and quality assurance for emphasis on the current situation and working with the academic administration and educational system: Passed by the curriculum. Yet, the innovation of educational administration still created and produced much more impact for the students’ learning; environment and decreased the effectiveness of learning; and teaching processes which linked; with the evaluation and measurement reflections of school administrators reputations; and school effectiveness.

**SIX Sigma and DMAIC Model**

Sigma is a Greek letter representing standard deviation or the amount of variation within a given process (McAdam and Lafferty, 2004). 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. Six-Sigma is a philosophy which has revolutionized many of the top companies in the world. They have achieved new height of success by implementing Six-Sigma. Six-Sigma is the tool that first identifies the correct problems and root causes in a process and then improves the process in totality with structured approach. Six-Sigma can act as a fresh tool to remove inconsistencies and defects in the sector by applying different measures, process design and / or redesign, improvement and various better management strategies and practices. Six Sigma measures are never “static.” As the requirements of a customer change, the process must change with it. This gives birth to the term "continuous improvement" which is another cornerstone to the Six Sigma philosophy. Constant evaluation of processes is what puts the flexibility in the system allowing it to change with the customers' needs. All of these business strategies have one thing in common. They stress customer satisfaction and the importance of incorporating customer input into the analysis of their processes. Many services processes tend to be slow processes which often mean they are expensive ones. Often they are slow because there is too much work in progress. A great deal of work, often as much as 80% has to wait while some other task is done (lead time), or some other step is accomplished, sometimes in
another department. When employees in service functions actually analyze their processes they tend to find that most of the steps in their processes add no value to the service, at least not in the eyes of their customers. (Harry and Schroeder 1999). 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. It provides the way to do things right at the first time and to work smarter by using data information. (Park, 2002)

Here Higher Education institutions act as business unit while qualified students are outputs who are either consumed by society and / or industry as end customers. And in quality centric world it is of prime importance that the product i.e. the students meet high quality standards for society and industry or company jobs. Implementation of Six-Sigma can help establish this confidence and expedite the value creation process. Six-Sigma in principle is a customer oriented tool. This means it works in such a way that it helps to minimize defects in the outcomes and can deliver maximum value from customers’ perspective. It also helps to make sure that the problems found are no more existent and will not be repeated. To bring positive changes study a qualified professional needs to conduct a comprehensive study to understand and analyze institutions’ current trends, their vision, mission, core processes and functionalities along with prominent and seasoned issues etc. Followed by SWOT analysis this can highlight critical areas of an institution that need immediate and prime attention. Once the criticality has been recognized the action plan can be prepared in order to mitigate these issues and eliminate whenever possible. This essentially would need further detailed analysis of each issue in isolation and then synthesis of the same with overall situation. A third party neutral perspective is of critical importance due to the fact that we usually are so close to the problems that we either do not see the bigger picture or miss many minute details that are interconnected. Sometimes it just blurs our vision with rosy feeling of self containment. Recommendations given from careful analysis would lead to the implementation plan; which when gets fully executed can put up a successfully running efficient institutional system which fulfils customer (student, society and industry) demands and yet maintains educational decorum intact.

**DMAIC Model**

Six Sigma aims at reducing variations in a business and manufacturing process via dedicated improvements in the various processes. This requires a sustained commitment from all members of the organization. This principle has been perfectly brought about by the DMAIC methodology, which aims at bringing about process improvement by eliminating defects. It is generally defined as a set of practices which are aimed at bringing about improvement in efficiency and eliminating defects among the many methodologies and strategies that Six Sigma allows is the DMAIC Model. It stands for Define-Measure-Analyze-Improve and Control. This model plays an important role in making the Six Sigma initiative a success for businesses. Black Belts follow this model to base their process improvement projects. The model was developed by Edwards Deming, aimed at reducing defects through improvement in processes.

The first step that refers to defining the goals of the project. Defining the problem and defining what the customer requires (Kapur and Feng, 2005). Process improvement goals may be aimed at increasing market share, the output of a particular department, bringing about improved employee satisfaction as well as customer satisfaction and so on. The goal
has to align the customer demands and the strategic goals of the organization. Data mining methods can be used to find prospective ideas for project implementation. In other words, businesses are designing a road map for achieving the targets and goals of the organization. The second step Measure refers to the analysis of the existing system with various measurement techniques for the defects and levels of perfection that exist. In this step, accurate metrics have to be used to define a baseline for further improvements. This helps Six Sigma team leaders understand if progress has been achieved when process improvements are implemented. Analyze phase is extremely important in order to determine any disparity that may exist in the goals set and the current performance levels achieved. Various statistical tools are available to undertake such an analysis. The understanding of the relationship between cause and effect is necessary to bring about any improvements, if needed. Improvements in existing systems are necessary to bring the organization towards achievement of the organization goals. Creative development of processes and tools brings about a new lease on life for the organization’s processes and takes them nearer to organizational objectives. Various project management and planning tools can be used to implement these new techniques and processes. Appropriate usage of statistical tools is important to measure the data, which is necessary to understand improvements done and any shortcomings that may exist. The last phase of DMAIC is the Control phase. It helps ensure that variations in the processes are rectified before they have a negative effect. Controls can be used to ensure sustained improvements in new processes and operating procedures. The new project components should become a part and parcel of existing processes. Once all the factors are performing to satisfaction, transfer of ownership should be done to process owners and process teams.

Conclusion
This paper has served to provide a review of the current literature and quality practice within higher education. It has identified those applications having Kaizen elements within higher education and the complexity this creates in its measurement and management. Despite this complexity, using kaizen as quality management tool is taken seriously in Higher education institutions and extensive efforts are being undertaken to improve quality management practices. These efforts appear to be divided, however, with earlier approaches adapted from industrial models focusing on the quality of administrative and service functions. In contrast, critics of industrial models have undertaken efforts to focus on the quality of the core products of Higher education, teaching and learning. Given current trends, the priority now must be to achieve greater harmonization between the two approaches in Higher education quality management practices. This paper also identifies various Kaizen elements which are relevant for implementation in higher education system and their performance. However, as the review has relied upon current publications that are mainly outside these fields some, there is clearly a need for further research. Further research should identify whether, within educational fields like higher education, there is a relevance to adopt industrial models like kaizen and six sigma as a tool to improve quality and whether its application more closely reflect the centrality of the student in line with a student-centered approach to learning. There is a need for these practices to be made more widely known across the academic community.
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