

Continuous Improvement through Kaizen in a Manufacturing Organisation

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Abstract - In the times when the economic performance and sustainable management are representing two of the most challenging characteristics of the business environment, there are some methods and techniques that passed the test of time. Currently, the issue of the quality is one of the most debated. The most important theme is represented by the way in which organizations are able to build a competitive strategy based on quality products and services in the circumstances of the increasing pace of competition. This paper proposes to bring into question the continuous improvement of the quality, productivity, profitability and speed of response to each job, processes and organizations as a whole, taking permanently into account the operational excellence, obtained by increasing the added value and by loss elimination that can be achieved by addressing the concept of Kaizen and Kaizen management as well. The great majority of companies are using in the present the Kaizen Business System, a system of management which has been expanding in all over the world, by having and implying the power of continuous improvement and standardization. Having as “role-model” the well-known Toyota Production System, Kaizen Business System has become the fundamental way of managing a business, which led to the creation of personalized management systems for companies. The main objective of this paper is to emphasize the importance of implementing a Kaizen management for organizations that are oriented towards quality and continuous improvement given the fact that in order to succeed organizations have to implement and maintain this kind of practices.

Keywords: quality management, continuous improvement, Kaizen, Kaizen event, Kaizen management.

1. INTRODUCTION

The essence of kaizen is simple and straight forward. Kaizen means improvement. Moreover, kaizen means ongoing improvement involving everyone, including both managers and workers. The kaizen philosophy assumes that our way of life-be it our working life, our social life, or our home life deserves to be constantly improved. In trying to understand Japan’s post-war ‘economic miracle’. Scholars and business people alike have dutifully studied such factors as the productivity, total quality control (TQC), small group activities, the suggestion system, automation and labour relations. They have given much attention to some of Japan’s unique management practices, among them the life time employment system, seniority- based wages, and enterprise unions.

The essence of most ‘uniquely Japanese’ management practices be they productive improvement, TQC (total quality control) activities, QCC (quality control circles) or labour relations can be reduced to one word ‘Kaizen’.kaizen is an umbrella concept covering most of the Japanese practices that have recently required unending progress, and kaizen has become a way of life.

Lean manufacturing is a term used to describe a manufacturing system that is primarily based on the Toyota Production System. The Toyota Production System (TPS) is a business strategy that was developed by Taiichi Ohno in the early 60’s. The goal of this strategy was to reduce inventory and improve the quality and cost of Toyota’s automobiles. As a result of this unique production system, Toyota became a leading automobile manufacturer. Other companies took notice, and the TPS became one of the most benchmarked production systems in the world [1]

All of these companies have benchmarked TPS because it has been very successful, and it is drastically different from traditional mass manufacturing methods. Lean manufacturing focuses on the customer rather than on the product. The entire purpose of lean manufacturing is to eliminate muda, the Japanese term for waste. Waste is considered to be any activity that absorbs resources without adding value to the product. Value is defined by the customer and therefore the goal is to eliminate all processes or activities which do not add value in the eyes of the customer

The basic concept of lean is simple, but sometimes it is hard to grasp exactly how to use this concept to improve a production system. One way to think about lean manufacturing is to break it up into different lean principles. Lean Thinking, a popular book about lean manufacturing, breaks up lean into five main principles: value, the value stream, flow, pull, and perfection..

The first two principles of lean manufacturing focus on the value of a product from the eyes of the customer. Many companies focus on their own “operational ‘efficiency’” and not on delivering a sound product to the customer .Lean manufacturing stresses

the importance of looking at a product from the customer's point of view. Then, from there, one can determine what parts of the manufacturing process are directly adding value to the product and which parts are not. The manufacturing processes that do not add value to the product are then eliminated.

The next key principle in lean manufacturing is to ensure that all of the remaining steps in the process flow together. This principle can be interpreted as a recommendation to arrange the manufacturing steps in such a way that makes the most sense. The key to flow is to focus on the product and not on the methods for making the product. It is more efficient and accurate to work on a product "continuously from raw material to finished good" than to handle the product multiple times using batch flow.

The fourth lean principle introduced in Lean Thinking is pull. The idea behind pull is relatively simple. In order to avoid overproduction, do not make a product until a customer orders it. Let the customer *pull* the product from the manufacturer when they want it.

The final principle of lean production is perfection. Perfection simply means that the process is never entirely complete and that it is essential that companies continuously work to improve the production process. The ultimate goal is to make the production process perfect. However, due to changing customer needs, the production process never will be perfect, and a company must continuously improve the production process to ensure that it is always as close to perfect as possible.[2]

2. KAIZEN

Kaizen is a Japanese word that indicates a process of continuous improvement of the standard way of work [3]. It is a compound word involving two concepts: Kai (change) and Zen (for the better) [4]. The term comes from Gemba Kaizen meaning 'Continuous Improvement' (CI). Continuous Improvement is one of the core strategies for excellence in production, and is considered vital in today's competitive environment [5]. It calls for endless effort for improvement involving everyone in the organization (Malik and YeZhuang, 2006). [6]

A company can move closer to perfection by continuously working on improving its current production system. The part of lean manufacturing that focuses on continuous improvement is referred to as kaizen. Kaizen is the Japanese idea that "great improvement eventually comes from a series of small incremental gains" [7]

Bassant and Caffyn [8] define the Continuous Improvement concept as 'an organization-wide process of focused and sustained incremental innovation'. Many tools and techniques are developed to support these processes of incremental innovation. The difficulty is the consistent application of Continuous Improvement philosophy and tools and techniques. As an organization wide process, Continuous Improvement requires the efforts of all employees at every level.

Wickens describes the contribution of teamwork to make the concept of Kaizen. The key role and authority of each supervisor as a leader of his team and emphasis is placed on teamwork, flexibility and quality. Teamwork and commitment do not come from involving the representatives of employees, but from direct contact and communication between the individual and his boss. [9]

Granja et al. [10] studied the target and Kaizen costing concept in a construction company. The aim is to develop the framework taking together these two matching approaches, which provides a basis for a total cost management system. The authors explain that the continuing series of Kaizen activities are needed to achieve product performance and reduce the cost. Combining target and Kaizen costing is a powerful approach for the construction company by assuring value for the customer at a low but profitable price.

3. KAIZEN EVENT

A kaizen event can also be viewed as a way to train employees in lean manufacturing and to empower them to create positive changes in their own work areas. At Toyota, kaizen events were initially used more as a training tool to instill lean thinking than to actually make company improvements (Shook, 1998). It is important to train employees in lean thinking. Employee involvement and empowerment have been shown to be critical in creating a lean production facility. [11]

A governing committee with managers from each of the business areas is a second recommendation towards an effective kaizen event program. The committee would be responsible for scheduling and supporting the kaizen events. It is very critical for managers to be involved in kaizen events in order to make them effective. One of the keys to having successful kaizen events is to set up a kaizen program. Some suggestions for having a successful kaizen program are to have a lean champion and a governing committee.. Ortiz suggests hiring an industrial or manufacturing engineer with expertise in lean manufacturing whose sole job is to execute kaizen. This person leads the kaizen events, is in charge of communicating with others in the organization about the events, and is responsible for following up on the events. Another suggestion by Ortiz is to use an event tracking worksheet to ensure that employees complete any necessary follow-up activities after the kaizen event. [12]

The purpose of holding a kaizen event is to improve the production process by holding workshops where employees "try to accomplish as much actual kaizen as possible". These events have become increasingly popular in recent years and are used by numerous companies to help implement and sustain lean manufacturing principles and practices. Some companies even try to measure success in an organization by counting the number of kaizen events held each year. Shook emphasizes some of the

pitfalls of kaizen events in his article in the book 'Becoming Lean'. He explains that companies need to use kaizen events as part of the plan for the entire system and not a group of stand-alone activities. Kaizen events can actually cause problems in a company if they are not part of an overall system.[13] At the end of a kaizen event, there are usually “dozens of niggling problems that don't surface until after the change” (Rother, 1998, p. 492). Manufacturing companies need to ensure that these problems are dealt with after a kaizen event to ensure that the event will have a positive effect on the company and its performance.

Other companies however, have had less success with kaizen events. Shook (1998) attributes this lack of success to the way that companies use them. Some companies hold kaizen events with the hope that the event will somehow “create a lean production system”. However, a kaizen event by itself does not make a company lean. [14]

Doolen et al. [15] describe the variables that are used to measure the impact of Kaizen activities on human resource. These variables include attitude toward Kaizen events, skills gained from event participation, understanding the need for Kaizen, impact of these events on employee, impact of these events on the work area, and the overall impression of the relative successfulness of these events.

4. KAIZEN AND MANAGEMENT

Japanese perceive job functions as two major components; maintenance and improvement. Maintenance refers to activities directed towards maintaining current technological, managerial, and operational standards; improvement refers to those directed towards improving current standards. Under the maintenance functions, management performs its assigned tasks so that everybody in the company can follow the established standard operating procedure. This means that management must first establish policies, rules, directives, and procedures for all major operations and then see to it that everybody follows SOP. If people are able to follow the standard but do not, management must introduce discipline. If people are unable to follow the standard management must either provide training or review or revise the standard so that people can follow it.

In any business, an employee's work is based on existing standards, either explicit or implicit, imposed by management. Maintenance refers to maintaining such standards through training and discipline. By contrast, improvement refers to improve the standards. The Japanese perception of management boils down to one rule: maintain and improve standards.

The higher up the manager is, the more he is concerned with improvement. At the bottom level, an unskilled worker working at a machine may spend all his time following instructions. However, as he becomes, more proficient at his work, he begins to think about improvement. He begins to contribute to improvements in a way his work is done, either through individual suggestions or through group suggestions which can be understood as improving standards means establishing higher standards. Improvement can be broken down between Kaizen and innovation. Kaizen signifies a small improvement made in the status quo as a result of ongoing efforts. Innovation involves a drastic improvement in new technology or equipment. [16]

5. IMPLEMENTING A KAIZEN MANAGEMENT SYSTEM

Brunet,2000 [17] in his seminar on 'Kaizen in Japan', *Understanding to Action* referred that the concept of kaizen was introduced in Japan in 1950 when the government and management had a feeling that there was a problem in their current management system and a pending labour shortage. The problem was solved with the help of some workforce. Ashmore,2001 [18] opined that Kaizen has become an important part of Japanese manufacturing system and has lent some useful contribution to the manufacturing success. A kaizen study is structured and focused improvement project using a team which is cross functional to improve a targeted work area in an accelerated timeframe as elaborated in *An Empirical Investigation of Kaizen Event Effectiveness Outcomes and Critical Success Factors* conducted by Farris2006 [19]. Kaizen calls for an effort for improvement involving everyone in the industry. Kaizen successful implementation results in healthy atmosphere where everyone in the organisation is aware of key goals, objectives and measure of success. Kaizen is considered to be more than just a continuous improvement process as it represents daily struggle occurring in the workplace and the manner in which these struggles can be overcome. Initial success of kaizen does not guarantee sustainability, some researchers come with an idea that kaizen events should not be done unless they can done with right intent and activities necessary to sustain results.

Application process of kaizen event basically consists of (Asada et al., 2000; Imai, 1986; Kraszewski, 2005; Suzuki, 1993)[20][21][22][23]:

1. Definition of the area to be improved
2. Key problem analysis and selection
3. Identification of cause of improvement
4. Improving project implementation
5. Measuring, analyzing and comparison of the results
6. Standardize systems.

Kaizen is a system that involves every employee - from upper management to the cleaning crew. Everyone is encouraged to come up with small improvement suggestions on a regular basis. In companies as Toyota and Canon, a total of 60 to 70 suggestions per

employee per year are written down and implemented. Suggestions are not limited to a specific area such as production or marketing. Kaizen is based on making changes anywhere that improvements can be made.

Kaizen involves setting standards and then continually improving those standards. To support the higher standards, Kaizen also involves providing the training, materials and supervision that is needed for employees to achieve higher standards and maintain their ability to meet those standards on an on-going basis. The term "standard" can be misunderstood as something rigid, unchanging, and absolute. If it is misunderstood in this way, it becomes an obstacle to Kaizen.

In order to implement an effective Kaizen management system we can broadly divide the shop floor activities into 3 groups based on their importance and the possible improvements which could be undertaken

1. Normal work done by a different method (highest importance)
2. Normal work which could not be done due to lack of non-availability of time and
3. Work that is totally unrelated to the normal job (least importance).

Most often, workers carryout their daily work in set, laid down procedure. Then, one worker introduces a change. It is only to be expected that such developmental work will eat into his already tight schedule. Therefore, one has first to reduce the time taken for completing regular tasks on hand, for, if the regular schedule is not adhered to, other improvements will only overload the workers. This is against the basic principles of kaizen and hence the innovation that speeds up or improves routine work is accorded highest priority.

In nutshell, since, kaizen is an ongoing process and involves everyone in the organization, everyone in the management hierarchy is involved in some aspects of kaizen. The aspects related to the top management, supervisors and workers at shop floor level are explained in the following table.

Table No. 1.1: The aspects related to the top management, supervisors and workers at shop floor level

Top Management	Supervisors	Workers at Shop floor level
Be determined to introduce kaizen as a corporate strategy	Use kaizen in functional roles	Engage in kaizen through the suggestion system and small group activities
Provides support and direction for kaizen by allocating resources	Improve communication with workers and sustain high morale	Practice discipline in the workshop
Establish policy for kaizen and cross functional goals	Support small group activities (such as Quality circles) and the individual suggestion system.	Engage in continuous self development to become better problem solvers.
Realize kaizen goals through policy deployment and audits	Introduce discipline in the workshop	Enhance skills and job performance expertise with cross education
Build systems, procedures and Structures, conducive to kaizen.	Provide kaizen suggestion	-----

In business Kaizen encompasses many of the components of Japanese businesses that have been seen as a part of their success. Quality circles, automation, suggestion systems, just-in-time delivery, Kanban (notice board, as a form of integrated control of part supplies) and 5 S are all included within the Kaizen system of running a business.

CONCLUSION

Kaizen management is providing a tool to adapt to the global competition by eliminating waste in the process of production, changing corporative culture and encouraging cross-functional links between the managerial staff and production workers, as well as combining between top down and bottom up management.

The results of the Japanese management though out the last decades based on the concept of Kaizen have been outstanding. Since its inception, the implication of Kaizen for businesses and SME has outgrown its initial scope in many parts of the world. It is a strategy for companies faced with the actual economic crisis and in need to keep their qualified manpower by eliminating waste and improving production and management according to the principles of Kaizen. This is the essence of Kaizen. These simple yet profound rules are what drive every employee to maintain safety, quality, low cost, and on-time, striving to make it better.

Indian industries need to follow the example of Japanese customer satisfaction is where it's at. Only if the customer is satisfied, then an organization can grow. Today, with the globalization and liberalization upon us, superlative quality in all stages of production is the need of the hour, and by applying the principles of kaizen, any organization can surely achieve it. Kaizen is a concept which covering most of these uniquely Japanese practices that have recently achieved such worldwide fame.

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