

The Kaizen approach to Quality

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ABSTRACT

The purpose of this presentation is to point out the merits of gemba (shop-floor)-oriented approach for solving quality problems. In particular, it points out that in the process of embracing the lean production system many problems can be identified and solved without employing high-tech and high-touch approaches but by involving people on the shop floor in Kaizen activities. Kaizen has been understood to mean small-step, incremental improvements, but it can also be employed as a tool of corporate strategy of embracing lean production system. Today, many manufacturing companies are plagued by such problems as high quality rejects, high inventories, long lead time of production, high costs of production, and inability to cope with customer orders.

These problems are derived from the very production system they embrace, namely, the traditional system in which sales forecast is the starting point of production. The lean system has been developed by Toyota Motor Corporation to cope with these issues. Its main focus has been to use customer orders as the starting point of production, and for that purpose, it has made every effort to make a flow of materials and information. Thus, one of the features of the lean system has been to make a smooth flow and shorten it. This can be readily practiced on the shop floor. This has led to the discovery that making a flow leads to improve the quality! In other words, making and shortening the flow automatically leads to improved quality. It is believed that embracing the lean approach is the more urgent task for management, rather than dealing with quality problems that keep popping up endlessly.

This presentation deals with the reasons why the shop-floor approach of making and shortening the flow leads improved quality performance.

Keywords: Gemba, Kaizen, Workplace Improvement, Quality

1.0 Introduction

The purpose of my presentation is to point out the merits of gemba (shop-floor)-oriented approach for solving quality problems. In particular, it points out that embracing the lean production by employing Kaizen approach leads to solve many quality-related problems.

My definition of quality is anything that can be improved: management must establish priorities in selecting improvement projects which are strategically important.

In this respect, the “quality” in this paper refers to improvements of key managerial activities to strengthen its competitive position.

2.0 What is Kaizen?

I define Kaizen as everyday improvement, everybody improvement and everywhere improvement.

Everyday improvement is a state of mind which is not satisfied with the status quo and believes that things must be improved everyday. The conventional interpretation of kaizen has been continual improvement but everyday improvement brings to mind far more disciplined approach to improvement.

Everybody improvement means that every one from top management to the rank and file must be involved.

Everywhere improvement means that Kaizen is cross-functional activities carried out not only on the shop floor, but also in all managerial functions.

Further, Kaizen means improvements which can be attained without spending much money, since there are many opportunities which can be improved by involving people's efforts and without depending on the state-of-the art technologies.

Although Kaizen has been regarded as a small-step, incremental improvements, it can be a tool for realizing a long-term corporate strategy, involving everybody in the organization.

In the following, I will explain Kaizen in the context of Gemba, and the two types of production systems.

3.0 What is Gemba ?

'Gemba' in Japanese means the place where real actions occur. In the case of manufacturing companies, 'gemba' means the shop floor. As pointed out in my book, *Gemba kaizen: A Common-sense, Low-cost Approach to Management*, the three major activities support good management practices in Gemba : standardisation, good housekeeping, and 'muda' (waste) elimination.

- These three activities are all hands-on, practical activities carried out on the shop floor and form the foundation of building a robust, reliable production system. The following five golden rules of gemba management is a good example of Kaizen's pragmatic approach to solving problems (including quality) on the shop floor.
 - (1) When a problem (abnormality) arises, go to gemba first.
 - (2) Check with 'gembutsu' (relevant objects).
 - (3) Take temporary counter-measures on the spot.
 - (4) Find the root cause.
 - (5) Standardise to prevent recurrence.

In managing gemba, the most critical part is for managers to go there and have a good look. Managers who stay away from gemba, and seldom take the trouble of going there, are in contact with gemba only through indirect means, such as reports and conferences. In such cases, managers are making decisions based on fabricated data.

When you go to gemba where an abnormality occurred, you do not need any data, because what you see there is the reality. A manager on the shop floor is right in the midst of reality, and chances are that the problem can be solved on the spot and in real time by following the five golden rules.

4.0 The requirement of production companies

Aside from meeting customer expectations for quality, manufacturing companies are requested to meet the following requirements.

- (1) Meeting seasonal, annual, monthly, weekly and daily fluctuations of customer orders
- (2) Producing many product variations within the same product range
- (3) Meeting orders for many different product types with different volumes and delivery requirements
- (4) Meeting changing customer wants and needs quickly.
- (5) Coping with the short product life cycle
- (6) Meeting the need to introduce new products faster
- (7) Making design changes to comply with changing customer requirements
- (8) Minimizing inventories of work-in-processes and finished products
- (9) Improving efficiency and productivity of people and machines
- (10) Improving quality and minimizing costs

The last item on the list, "improving quality and minimizing costs" requires special attention.

A conventional thinking is that improving quality costs more money. Since today's enlightened customers request better quality at lower cost, the real challenge is how to meet these contrasting requirements. This article proves that Kaizen is the way.

5.0 Two production systems

Two production systems exist today, namely, the traditional system and the lean system. The former has been unable to meet the above-mentioned requirements and the latter system has been developed to replace the traditional system. Kaizen has been the means of converting the traditional system into the lean.

In the following, a brief explanation is given on the contrasting features of the two systems.

(1) The Traditional system

Sales forecast is the starting point of production in the traditional system. The materials run from upstream (raw materials) to downstream (final products). Its production information also runs from upstream to downstream since production orders are issued in upstream processes based on sales forecast and passed on to down stream processes.

The production processes are often physically separated and there is no visible flow and the line is often disconnected.

The traditional system is thus characterized by interrupted flows, big inventories and a long lead time of production between customer orders and deliveries.

In short, the traditional system is characterized by an abundant use of resources, such as manpower, equipment, materials, utilities, space and time. It is an expensive way of making products and yet it is not capable to flexibly meet above-listed requirements of manufacturing companies.

(2) The Lean system and the flow

The lean system has been developed by Toyota Motor Company to meet the above listed requirements. I should mention that Toyota built its system mostly based on carrying out the gemba Kaizen activities on the trial-and- error bases for more than half a century.

One of its features has been to connect all processes by a flow. Since its ultimate aim is to start production on receiving customer orders, the information (customer order) typically arrives at the last process (assembly process) and production is based on takt time and works its way upstream until it reaches raw materials

The first step of embracing lean from the traditional system is to make an uninterrupted processes and flow of materials. Whenever a smooth flow is interrupted between processes, the bottlenecks must be identified, removed and the flow must be made and shortened by various Kaizen activities.

Kaizen has been used as a means of identifying and solving problems by Toyota.

For this reason, Kaizen has become an indispensable tool for transforming a traditional production system into the lean system.

6.0 The merits of making a flow

When the entire processes are connected and shortened with a flow, the following merits are achieved.

(1) Quality is improved.

A shortened flow requires minimum resources, which leads to improved quality. For instance, employing less number of operators leads to less number of mistakes. In addition, the lean system includes many features to improve quality such as one-piece flow which enables 100 % inspection and autonomation (jidohka) which automatically rejects defectives.

The lean system generates the state of mind which does not allow rejects to be passed on to the next process.

- (2) Cost is minimized since minimum resources are utilized, such as less number of people, less materials, and less number of inventories within the less space and time.
- (3) Flexible delivery to customers is assured because of the short lead time.
- (4) Standardization of work procedure is promoted.

- (5) 5-S activities are positively carried out to make and shorten the flow.
- (6) Management structure is much simplified.
When the information flow is extended throughout the processes, the management structure is simplified because the information coming from down stream processes (from the customer) dictate what needs to be done by means of takt time and Kanban.
As a result, many managerial interventions carried out in the traditional system will be lifted.
- (7) Since bottlenecks in the flow can be readily and visually identified, everybody can be engaged in solving bottlenecks on a continual basis.

7.0 Summary

Quality issues are often dealt with in the context of various problem solving tools and techniques, such as SQC and QFD. This article suggests a different approach to quality from the stand point of practical approach of quality problems in gemba..

It shows that many quality problems can be solved by involving everyone in gemba and that it should not be left in the hands of quality professionals alone.

The axioms, “build quality in the process”, “the next process is the customer”, and “don’t get, don’t make, don’t send rejects” express everybody’s commitment to quality. It is the state of mind which matters most and can be achieved only when lean production system is embraced on the company-wide basis.