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## **Managing Cost Through Waste Management**

*By Sunil Thawani*

During the recently concluded Share Best Practices 2002 conference, organized by Dubai Quality Award Secretariat and Dubai Quality Group on 12<sup>th</sup> and 13<sup>th</sup> May'02 at Dubai Chamber of Commerce, Dubai, many Managers and Quality professionals had an opportunity to listen and meet Mr. Masaaki Imai, a leading authority on Quality and " Father " of Kaizen. His keynote address was full of wisdom with live, interesting and useful examples. It introduced a simple, yet effective way the companies can manage cost through waste management and by involving all their employees. His brief talk had a profound and lasting effect on me and inspired me to learn more about his teachings. Purpose of this paper is to share my learning about this highly effective common sense approach to managing cost.

At one major Japanese electronics company, the semiconductor laser developed for use in compact-disc player cost ¥500,000 in 1978. In 1980, it was down to ¥50,000 and by the fall of 1981, it had been reduced to ¥10,000. In 1982, when the first compact-disc player was put on the market, the semiconductor laser cost only ¥5000. As of 1984, it was down to the ¥2,000 to ¥3,000 level.

Company wide suggestion system based on small groups, and their aggregate investment of ¥200 million has yielded cost saving of ¥1 billion.

During its first three years (1978-1980), the " Ai " movement in a Japanese company produced 928 suggestions and yielded total saving of ¥600 million (U.S. \$2.4 million). The cost of supporting this campaign was ¥125 million (U.S. \$ 500,000). In 1981, 987 suggestions were implemented, leading to ¥630 million (U.S. 2.5 million) in cost savings. The cost of the movement in the same year was ¥160 million (U.S. \$ 640,000), including the cost of making improvements based on suggestions.

In terms of each individuals work, the smallest unit of work time considered in a KAIZEN strategy is 1/100th of minute, or 0.6 seconds. Management of Nissan seriously considers any suggestion that saves at least 0.6 seconds - the time it takes a worker to stretch out his hand or walk half a step.

The above examples are hard to believe. But these and many more are well-documented facts in Mr. Masaaki Imai's books on Kaizen and Gemba Kaizen.

Mr. Eiji Toyodo, Chairman of Toyota Motor Company once remarked that Japanese workers use their brains as well as their hands. Our workers provide

1.5 million suggestions a year and 95 % of them are put to practical use. At Toyota improvement is in the air “

But what is the secret of Japanese companies behind such hard to believe improvements? It's a simple common sense, low cost approach to identifying and eliminating waste in all its forms – production, inventory, rejects, repairs, transportation, motion, time etc. - on a continuous basis involving everyone. And this “ magic band “ is called GEMBA KAIZEN. One Executive rightly remarked “ It is extremely difficult to increase sales by 10 %, but it is not so difficult to cut manufacturing cost by 10 % to even better effect “.

Gemba and Kaizen are Japanese words. Gemba means work place or where value is added and Kaizen means continuing improvement in personal, social and work life involving everybody.

Japanese companies have institutionalized Gemba Kaizen as one of the their management system to identify “ Muda “ (Waste or non value adding). Muda (waste) elimination epitomizes the low cost common sense approach to improvement.

Waste or non-value adding activities i.e. Muda is identified in the following 7 categories:

1. **Muda of over production** is to produce more than necessary just to be on safe side. It may happen due to many reasons like an expensive machine is involved and requirement of product is disregarded in favour of efficient utilization of the machine or problem of rejects, absenteeism etc. *Muda of over production is the worst muda of all and is regarded as a crime.*
2. **Muda of inventory:** Final products, semi finished, raw material and parts kept in inventory do not add any value. It adds to cost, occupies space, needs more equipment, facilities - warehouse, forklifts, conveyor systems, manpower to manage warehouse. And most of the time quality of items stored deteriorate over time, gather dust and can be destroyed in accident/ fire. *If over production is crime inventory is treated as enemy to be destroyed.*
3. **Muda of repair/ rejects:** Rejects interrupt production and require expensive rework. Rejects are often discarded. It is a great waste of resources and effort. Objective is – “ Don't make rejects in one's product. And if a reject has been produced, don't knowingly send it to the next process and Don't accept inferior quality from the previous process. “
4. **Muda of processing:** At times inadequate technology or design leads to muda in processing work itself. e.g. over run for machine processing or

complicated bureaucratic process takes too long and is costly to process e.g. processing information to generate invoices has 14 steps. Elimination of muda in processing can frequently be avoided by combining operations/ steps.

5. **Muda of motion:** Any motion of a person's body not directly related to adding value is unproductive – e.g. walking or carrying an item from stores or picking and putting down tools/ component/ item is a non value adding activity.
6. **Muda of transport:** Moving materials or products using trucks, forklifts, conveyors etc. do not add value. Movement often damages material. Excess inventory & needless waiting is a high form of transport muda. To eliminate transport muda – any process physically distant from the main line should be incorporated into the main line if possible.
7. **Muda of waiting:** When the hands of Operators are idle or Operators work is put on hold due to lack of parts or waiting for next piece to arrive or information or Operator is simply monitoring the machine as the machine performs value adding job is the Muda of waiting.

***One of the easiest ways for a company to improve its operations is usually for it to stop doing what it has been doing until now.***

Sample Muda results:

	<b>Improvement</b>
Set up time	- 66.4 %
Lead time	- 55.7 %
Cycle time	- 17.9 %
Downtime	- 52.1 %
Operators required	- 32.0 %
Work in process inventory	- 59.3 %
Fin. goods inventory	- 43.5 %
Distance traveled	- 54.1 %
Rework	- 71.7 %
Scrap	- 45.9 %
Equipment required	- 34.0 %

By identifying and eliminating waste, using Gemba Kaizen methodology, Japanese companies have achieved economic superiority in the world through improving quality and productivity.

## **Golden Rules of Gemba (Workplace) Management:**

- When problem arises go to work place first (like a detective);
- Investigate or check the object carefully e.g. a customer complaint or wrong invoice or defective item produced/ pile loads of inventory;
- Take temporary countermeasure promptly ;
- Find the root cause of the problem e.g. if there is too excess inventory question what kind of system of purchase do we have or why do we keep producing parts we do not need;
- Develop/ amend the existing procedure/ system to prevent its recurrence.

Unlike many western approaches like Business Process Reengineering, Six Sigma, Gemba Kaizen is not a dramatic technique, which calls for massive investments, creates few champions and attracts lot of attention for a short period of time. Gemba Kaizen is a group effort for continuous incremental improvement, having a lasting effect and which can be standardized and used as a management system.

*This article is based on the teachings of Mr. Masaaki Imai and the examples quoted by him in his book – “ Kaizen “ and “ Gemba Kaizen “*

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