

DETERMINING THE EFFECTIVENESS OF KAIZEN IMPLEMENTATION IN
REDUCING WASTE AMONG ELECTRONIC COMPANIES IN MELAKA

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Hereby, I acknowledge that this report is my own work except for citations stated in
the references

Signature :

Name :

Date :

“For my beloved parents, family and friends”

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ABSTRACT

Waste is one of the biggest problems faced by companies, as it relates to the quality of products produced. Kaizen or continuous improvement is based on product, process or services aims to continuously minimize waste and increase productivity. Kaizen approach is a comprehensive system that is integral part of high-level strategy it involves all functions and departments, involves all employees, from the top to bottom, and including network providers and network customers. The research aim is to determine the effectiveness Kaizen to minimize waste. In case Texas Instruments Company many products can't deliver to customer on time due to the product failed the cycle time. The product failed the cycle time due to employee wasting time in production. The researcher use Kaizen activities to identify the effectiveness of Kaizen to minimize waste. The research utilized implementation of Kaizen activity and framework. A survey was conducted and questionnaire was distributed to 100 respondents and number of return is 100 percent. The data was analysed quantitatively and resolving the problem. From the result, the researcher found that 5S principle affect the most in waste minimization followed by Quality Control Circle and Just-in-Time.

ABSTRAK

Pembaziran ialah salah satu masalah terbesar yang dihadapi oleh syarikat, kerana ia berkaitan dengan kualiti produk yang dihasilkan. Kaizen atau penambahbaikan berterusan berdasarkan produk, proses atau perkhidmatan bagi matlamat meminimumkan sisa dan meningkatkan produktiviti secara berterusan. Pendekatan Kaizen ialah satu sistem strategi tahap tinggi serta menyeluruh yang melibatkan semua penggunaan dan jabatan, semua kakitangan dan termasuk penyedia rangkaian dan pelanggan-pelanggan rangkaian. Sasaran penyelidikan ialah untuk menentukan keberkesanan Kaizen dalam meminimumkan pembaziran. Dalam kes, Syarikat Texas Instrument tidak boleh menyalurkan produk kepada pelanggan tepat pada masa disebabkan oleh kegagalan kitaran masa produk. Kegagalan kitaran masa produk disebabkan pembaziran masa dalam pengeluaran oleh pekerja. Penyelidik menggunakan aktiviti-aktiviti Kaizen bagi mengenal pasti keberkesanan Kaizen dalam meminimumkan pembaziran. Justeru, penyelidik menggunakan pelaksanaan kegiatan Kaizen dan rangka kerja. Satu kajian dijalankan dan soal selidik diagihkan kepada 100 responden dan kadar pulangan ialah 100 peratus. Analisis data secara kuantitatif dan menyelesaikan masalah. Dari keputusan, penyelidik mendapati prinsip 5S menyumbang paling banyak dalam mengurangkan pembaziran diikuti oleh Quality Control Circle dan Just-in-Time.

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NOMENCLATURE

5S Sorting, Set in order, Shine, Standardise and Sustain

QCC Quality Control Circle

JIT Just-in-Time

Chapter 1

Introduction

1.1 Background

According to Nameer (2008), Kaizen is a Japanese word. Kaizen basically composed of two words “KAI” means change and “ZEN” means better. In other words, it means that Kaizen is about change for betterment or improvement. Kaizen is a philosophy that defines management’s role in continuously encouraging and implementing small improvements involving everyone. It is the process of continuous improvement in small increments that make the process more efficient, effective, under control, and adaptable. The key aspect of Kaizen is that it is an on-going which never ending improvement process. It’s a soft and gradual method opposed to more usual western habits to scrap everything and start with new. As for Japan, where the concept originated, Kaizen applies to all aspects of life, not just in the workplace. This mean Kaizen involve lifestyle, process and production.

Organizations implement Kaizen to improve productivity and reduce waste. According to SatiStar Corporation (2012:2), they clarify that the goals of Kaizen include the elimination of waste (defined as "activities that add cost, but do not add value"), reducing paperwork, improving office productivity, just-in-time delivery, production load leveling of amount and types, standardized work, paced moving lines, right-sized equipment, etc. A closer definition of the Japanese usage of Kaizen is "to take it apart and put back together in a better way." What is taken apart is usually a process, system, product, or service. Kaizen provides many advantages for company that applying this principle.

Opera and Kobashi (2009) explain that Kaizen provides a structure to channel the opportunities for improvement detected by any employee and convert them into realizing changes that have a positive impact in the way people perform and perceive their work. The company implements Kaizen to require a formalized structure within the organization, where collaborator's proposals are evaluated, implemented, reviewed and recognized according to their alignment to the company's declared objectives for continuous improvement. The recognition system also helps motivate collaborators to participate, either individually or through team work, in the proposal and implementation of their improvement ideas.

Referring to Robinson (1991:15), there are seven types of waste that influence the cost that will be sustained by the company. The seven types of waste include inventory, waiting times, transportation, worker motion, employee skills, over production, excess quality and in processes. Kaizen improves space utilization, product quality, uses of capital, communications, productions' capacity and employee retention.

In Malaysia, many companies implement Kaizen to minimize waste instead of to increase productivity and profit. Many of researchers studies on Kaizen with intend to determine whether Kaizen that have been implemented had effectively minimized the waste in the company.

1.2 Problem Statement

The products that exceed the cycle time become critical issue in manufacturing industry. Infineon and Texas Instruments factories have to sustain the loss when the products exceed the cycle time and product can't deliver on precise time. In this case, the company has used the Kaizen activity to minimize the problem. Kaizen is one of the ways to make a continuous improvement for the constraint that arises. This is because the problem gives a negative impact to the company. Time production had extended from original planning because the production schedule needs to make adjustments on product or process that cause cycle time failure. It also gives the impact to deliver the product on time to the customer because the industries need to ensure the product will complete produce before send to customer. The problem caused time wastes, materials and many more. Despite, flaws occurred will affect the image and product brand of the company. Possibility the company can loss many orders from their customers.

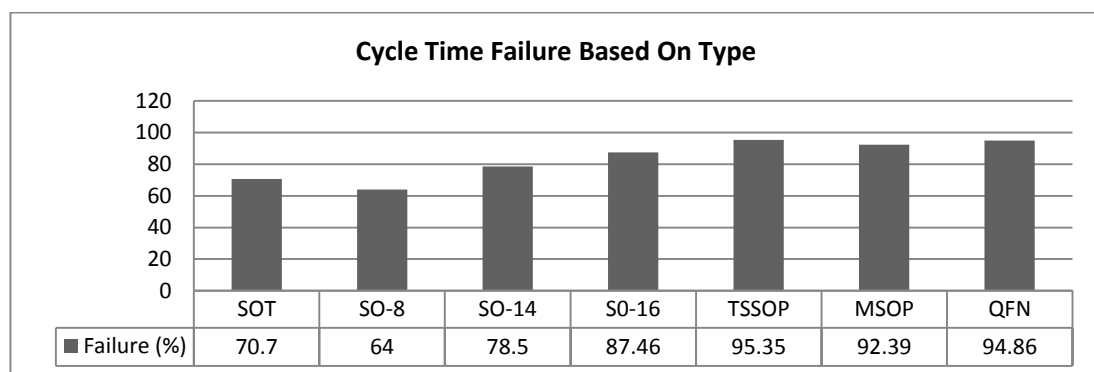


Figure 1.1: Percentage of Product Fail the Cycle Time

(Source: Texas Instruments Company report (Feb 2013- Sept 2013))

Figure 1.1 shows that the products that fail the cycle time. All of the failures occur within February 2013 until September 2013. The data showed the types of product rejection through the chart. The highest failure comes from SOT product. In conclusion, the researcher will determine the cause of the problem. To identify the cause of this problem occurs the researcher has used quality tool. The quality tool is cause and effect diagrams which constructed in a brainstorming atmosphere. To solve the problem, small groups were drawn from operational areas.

While in Murray Corporation, there are many types of problems that occur in the company. The problem causes the product delayed to deliver to the customer. By using Fishbone diagram Quality Control Circle group determines the type of problem and make some observation. Figure 1.2 below shows the type of failures that effect on product performance.

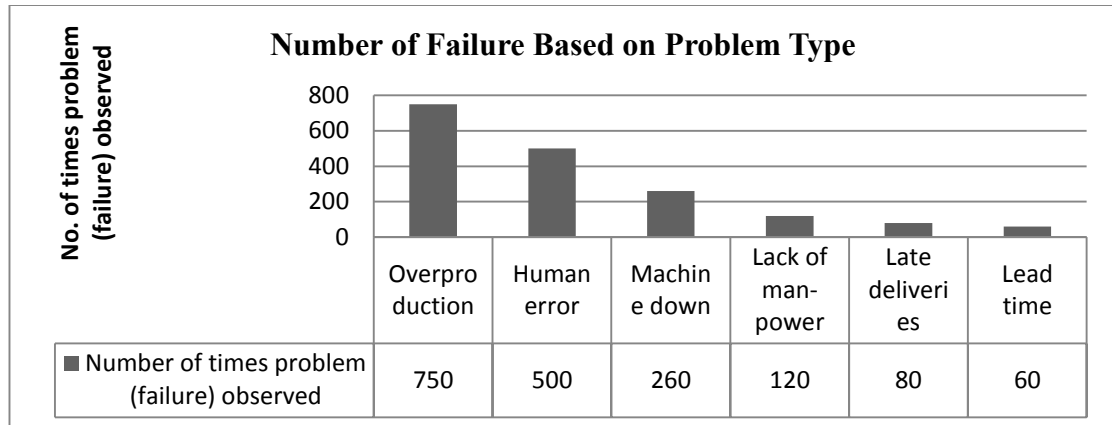


Figure 1.2 Number of Failure Based on Problem Type
(Source: Murray Company, 2010:32)

1.3 Research Questions

- 1) What types of Kaizen activities do the companies introduce in order to create employees' awareness in waste minimization?
- 2) What is the most dominant Kaizen activity towards waste reduction in the companies?
- 3) How do the organizations determine company-wide employees' involvement in minimizing waste through Kaizen activities?
- 4) Do the programs lead to successful Kaizen implementation among the employees?

1.4 Research Objectives

- 1) To identify the types of Kaizen activities being implemented in the companies.
- 2) To identify the most dominant Kaizen activity towards waste reduction in the companies.
- 3) To find out whether employees' involvement in Kaizen activities has led to minimizing waste in the companies.
- 4) To make recommendations for successful Kaizen implementation.

1.5 Scope of Study

This research focused on the effectiveness of Kaizen implementation to minimize waste at selected electronic companies which are Infineon and Texas Instruments. Kaizen is a continuous improvement that help company to reduce waste instead of increasing productivity and revenue. Kaizen comprises many activities that help to reduce waste in different ways. Kaizen activities are useful to do improvement either in process or product. The researcher will distribute questionnaires to respondent for identifying the effectiveness of Kaizen implementation and to minimizing waste in company. The researcher focuses on top managers in the organization to get the information through interview. This is because top managers know more about the effectiveness of Kaizen and waste reduction that occur in the company. Questionnaire will be distribute to employee that involves in quality improvement program. The location of this research is in the Infineon and Texas Instruments.

1.6 Limitation of Study

The researcher has only 4 months to complete this research. It is hard for the researcher to complete this research within a specified period, because it takes time to gather enough data and information. For the research to identify the effectiveness of Kaizen activities, the focus is only on the industry. The researcher also distributes questionnaire only to employees in Infineon and Texas Instruments.

1.7 Importance of Study

Kaizen is a solution that helps to minimize waste in electronic companies. Waste that occur in company can reduce productivity and revenue of particular company. This research will be the reference regarding Kaizen activities that differ in functions which company able to implement suitable solutions on the respective waste or problems. In additions, the study is to find out the effectiveness of Kaizen implementation in reducing waste.

1.8 Summary

Basically, most of the study will explain about Kaizen programs that help to reduce waste. There are different kinds of technique that rely under Kaizen which provide different solutions to reduce waste. The participation of all employees helps to make the activity realize. The rationales of Kaizen help companies to maintain the competitiveness and always come out with new technology and products.

Chapter 2

Literature Review

2.1 Introduction

This chapter discusses about theories of previous research. The researcher use a variety of references such as book, journal, article, thesis and other printed resource. With these resources, it helps researcher to understand and internalize the research. Besides that, the researcher will describe the approach and findings of previous research. The literature will discuss about Kaizen principle, the definition of Kaizen and the effectiveness of Kaizen to minimize waste by using these references. This is because one has its own opinion about the effectiveness of Kaizen to minimizing waste. In addition, it also includes the Kaizen activities a few elements that will help to minimize waste that causes the productivity of company law.

Kaizen or continuous improvement that in charge to minimize waste in the companies. Since electronic gadget is one of the needs nowadays, electronic industry faced rapid growth in the product produce. From time being, the technology becomes advance and those companies that late to produce new technology will leave behind. Vigorous improvement should be done to avoid the technology become obsolete. Therefore, electronics companies always do continuous improvement to maintain the competitiveness. Besides, the companies will reduce waste in the company so that they can increase the productivity.

According to (Hines and Taylor, 2000), the rationale behind going lean centres on waste removal both inside and between companies. This is fundamental to a lean value stream. Improved productivity leads to leaner operations, which in turn help to expose further waste and quality problems in the system. The systematic attack on waste is also a systematic assault on the factors underlying poor quality and fundamental management problems. By minimizing waste in the company, the productivity and quality of product or process can be increased. Currently, the involvement and understanding of employees in Kaizen implementation also play an important role in determining whether the Kaizen implementation is successful or not.

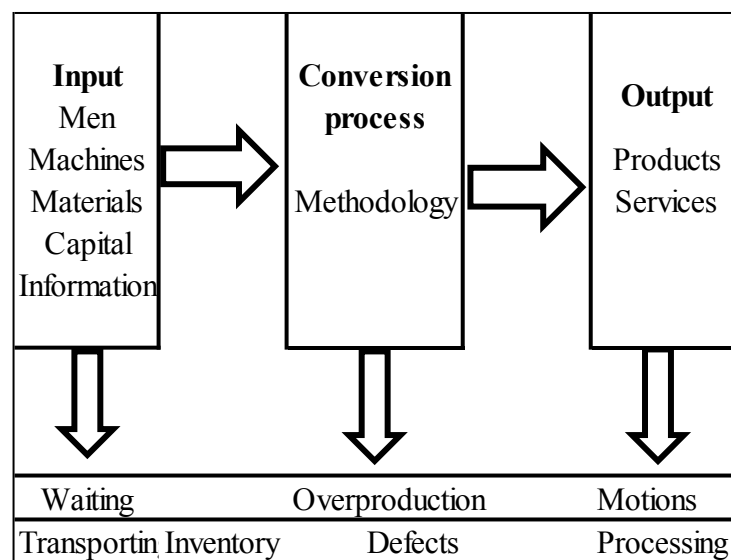


Figure 2.1: Relationships In Operations

(Source: Teian Consulting International Singapore, 2012:9)

A simple, proven technique known as “seven wastes” developed by the famous Toyota Motor of Japan has been used by many companies all over the world to improve the productivity of their operations. This technique is based on the “non-cost principle” that emphasizes reducing costs to achieve higher productivity for a company (Hines, 2012).

2.2 Kaizen or Continuous Improvement

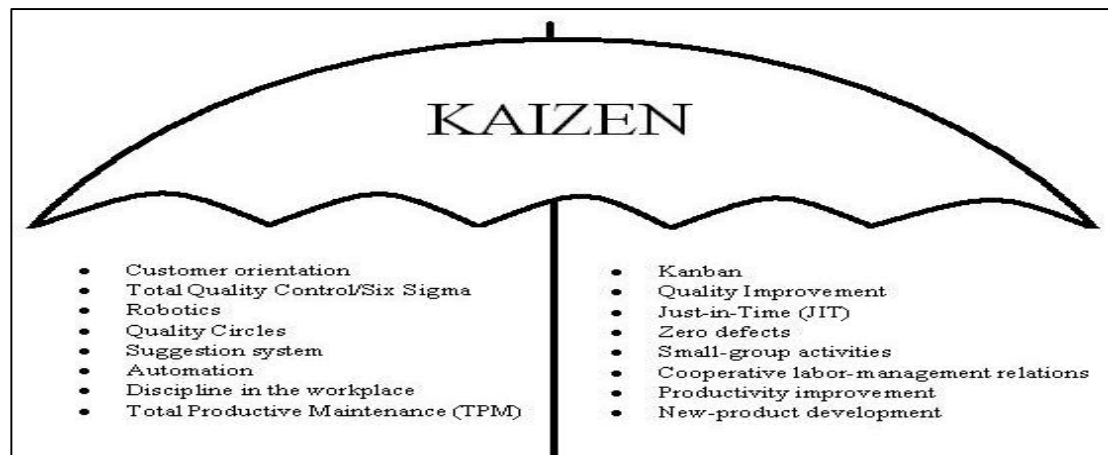
According to (Imai, 1986 cited in Robinson, 1991:198) one of Japan's foremost improvement experts clarify that Kaizen is everybody's business. The Kaizen concept is crucial to understanding the differences between the Japanese and Western approaches to management. If asked to name the most important differences between Japanese and Western management concepts, unhesitatingly say, "Japanese Kaizen and its process-oriented way of thinking versus the West's innovation and results-oriented thinking".

Basically, there are only two kinds of companies: those that subscribe to Kaizen and those that do not. With this statement because Kaizen gives priority to the process before they get a product while Western focus on the finished product to make an improvement.

According to Goetsch and Davis (2000) Kaizen is the name given by the Japanese to the concept of continuous incremental improvement. Kai means change, and Zen means good. Therefore, Kaizen means making changes for better on a continual, never-ending basis. The improvement aspect of Kaizen refers to both people and processes. While (Brown et al., 2001, p. 139) mention that:

"The essence of Kaizen is simple and straightforward: 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".

From both these statements, it can be said that Kaizen is a continuous improvement that can be executed in the product development and process. This Kaizen should involve all employees from top to bottom management. Kaizen shows that company should constantly improve their working life, process and human behavior to increase the productivity. Imai (1986) stated that Kaizen is an umbrella concept covering most of those "uniquely Japanese" practices that have recently achieved such worldwide fame. Figure 2.2 shows Kaizen Umbrella from (Imai, 1986:4).



Source: Encyclopedia of Management (1998)

Figure 2.2: Kaizen Activities

These statement shows that Kaizen is a continuous improvement that continually happen in every company to obtain competitive advantage. As we know, in electronic industry technology always changes and innovation is rapidly execute. Company has to do continuous improvement to improve their product and process. Instead, the continuous improvement also helps to minimize waste because every improvement was based on the main problem that occurs within the product and process. By minimizing waste, company can reduce cost and invest the money in R&D department to innovate product rapidly.

Every company is facing a different situation and problem. The Kaizen activity consists of variety technique to overcome the problems. Company has to choose a suitable problem-solving and execute the technique in the company. Goetsch and Davis (2000:195) mentioned that “Continuous improvement of products requires continuous improvement of company processes’. Hoping to obtain a qualitative improvement of products by means of closer control is a method that is not entrepreneurial valid, because it is in conflict with cost control. ‘Higher quality = high cost’ was actually a postulate of the earlier company model, in which quality was regarded as a factor that could be controlled by inspection procedures ‘approval’. In my mind, that company should focus on the process and track the improvement closely. This is to increase quality of the product, company should control the cost. Therefore, by making an improvement, waste can be reduced and quality of the product can increase.

2.3 Kaizen Activities

2.3.1 The 5S

Previous research done by (Robinson,1991) explain that improvement activities to promote these principles come under the general heading of Five S- five Japanese words that mean proper arrangement(seiri), orderliness(seiton), cleanliness(seiketsu), cleanup(seiso) and discipline(shitsuke). Some people complain that industrial housekeeping costs time and labor, but produces no return. The function of Five (5) S principles, however, is to reduce and ultimately prevent quality and productivity losses. They are essential to the elimination of waste in the work area and the factory as a whole. I agree with this because employee can save their time to search for tools that they need when there are tools placement with labeling. Besides, employee can protect the tools from damage because it is kept at a proper place.

Karkoszka and Honorowicz, (2009) states that the basis of Kaizen is constituted by 5S concepts, defined by Japanese specialists as a set of good customs and manners, deriving from the traditional manner of behavior in house and school. Determination 5S” dates from the Japanese words seiri-(selection); proper (suitable) preparation of a workplace, manner and instrument of work; with the elimination of everything useless, x seito-order (systemic); tidiness in a workplace and preparation of every required tools in the manner enabling simple and quickly utilisation, x seiso-clearness (cleaning); order in a workplace allowing on increase of safety of workplace, control of equipment and responsibility for the means of production, seiketsu-consolidation (standardisation); reminding employees about their duties in the aspect of care of used tools and equipment and about keeping the workplace order, shitsuke-discipline (self-discipline); adaptation of employees to the principles accepted by the organisation, independent elimination of bad custom, training.