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# KAIZEN COSTING – A MANAGEMENT TECHNIQUE

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**ABSTRACT**
*This study explores the application of Kaizen costing – a continuous improvement management technique – in reducing lead time and enhancing customer satisfaction at ABC Company. Focused on minimizing time losses in sales order processing, the research follows the PDCA (Plan-Do-Check-Act) cycle to identify bottlenecks, analyze root causes, and implement solutions that streamline operations. Using a value-added analysis, the study differentiates between value-added and non-value-added activities, leading to the redesign of workflow processes. Post-implementation data shows a reduction of 14.93% in production lead time and 6.98% in sales order processing time. The findings demonstrate that Kaizen not only minimizes waste and time losses but also fosters a culture of employee involvement, standardization, and sustained improvement. The study underscores the significance of top management support and a process-oriented mindset to ensure long-term effectiveness. This case illustrates how Kaizen can drive efficiency and quality in manufacturing without significant capital investment, contributing to overall organizational competitiveness.*
**KEYWORD:** *Kaizen Costing, PDCA, Manufacturing, Customer, Implementation, Etc.*

## INTRODUCTION

Kaizen is a concept that focuses on improving a work area or an organization in incremental steps by eliminating waste. Kaizen can be applied to any area in need of improvement. Industries especially manufacturing is currently faced with the conflicting pressure to improving customer satisfaction and service as well as pressures of cost reduction, reducing lead time, and quality improvement in order to get better results.This study is thoroughly focus on reducing time losses while at the same time reducingthe lead time of sales order processing in ABC Company and indirectly improves customer satisfaction.

## OBJECTIVES OF THE STUDY

1. To identify time losses at production area
2. To identify opportunities for kaizen improvement using a problem solving approach
3. To describe the effects of the improvement using time measurements.

## RESEARCH METHODOLOGY

The kaizen step is the method to develop Kaizen projects, and follows PDCA approach. All improvement projects, despite of their nature (costs, quality, safety, ergonomics, environment, logistics, etc.) must follow specific guidelines which are defined within kaizen step. Guidelines mean what project type, operating steps and tools to be used and way of using them.

**Step 1: Define Pilot Area**

Define pilot area is the first step towards ongoing with the improvement activities. Bottle neck processes are commonly defined the pilot area. In order to find the bottle neck process, the business general procedures as well as sales order processing flow is mapped starting from order enter until delivery and payments from customer.

**Step 2: Identify Losses**

Basically, losses are identified from abnormality. In this project, we choose to focus ontotal loss of time. This is the problem that we observed in the line. Other losses are not visible. This is because the company is project type based. So, times are most significant due to on time delivery mission. In order to identify the time losses, time of each step in process mapping of production processes are categorize to Value Added(VA) and Non Value Added (NVA).

**Step 3: Plan Preparation**

Scheduling the project is planned for 4 months. Step by step of kaizen must be followed to get the actual result of kaizen steps effectiveness. In project schedule, each steps oractivities is perfectly allocated its duration. This project schedule consist 11 activities which had to finish in 14 weeks of duration time.

**Step 4: Organizing Team**

The next step in Kaizen will be organizing the Project Team. The team are put together and expected to come up with a solution to a problem and success in the project conducted. Target is set due to project planning and project schedule. Specifically, target of the project is to reducelead time of sales order processing processes at least 5%.

**Step 5: Project Implementation**

At this step, PDCA Cycle was used as problem solving approach. Problems are solved more effectively when used the systematic approach. In PDCA approach, there have 7steps that need to follow. Step by step was followed without skip.

***Define the problem***

From the time losses that have been calculated, the times are divided by problems. Figure 1 shows the percentages of time losses by problems. From that, can be seen that major contributors of time losses is 'Rework or Redesign part' problems which is 58.79%. Therefore, this problem has chosen to attack.

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***Detect Root Cause***

Why analysis is used to detect the root cause of the problem. The root cause is procedure of company not appropriate to follow by management and customer, and there also not have customer approval. Thus, a counter measure that proposed is change the company procedures of sales order processing and provide a customer approval to fit with and solve the problem faced.

***Data Collection***

Data already collected before started kaizen steps. From counter measure are proposed in why-why analysis, each current procedures of sales order processing flow are studied.




**Figure 1: Percentages of Time Losses by Problems**

***Analyze and Establish solution for the problem***

From the counter measure that proposed and the process description, Value Added Analysis have used to come out with solution. First of all, a brain storming session was done among team members. During brain storming, each process of sales order processing flow are discussed and evaluated in order to categorize the process to Value Added (VA), Non Value Added (NVA) and Necessary Non Value Added (NNVA).

Those processes will go through in deep. Firstly, the three NNVA processes is a quite same process which is discussion process. The team viewed, it will be saving the time if those three processes are combined together. That mean, only one meeting to discuss with customer will be held involving the management, production and designer. Besides, the two NVA processes are supposed to eliminate from the process flow. For quotation process because there have two process that a same function, thus, decision are made to focus on one times only which is at process 2. That's mean, at the same time of filling the form; quotation will be issued directly to the customers.Thus, quotation processes no need for two times, which is materials confirmation by production also, need to remove from the process flow. This is because management itself can confirm the materials and order from supplier. In other side, materials can be already confirming as well as each section which is management; production and designer is seat together with customers in first meeting as proposed. Other than that, which is Auto CAD drawing, will be provided customer approval form in order to avoid from customer change the design after fabrication start. If customers have satisfied with the drawing that designed, customers will fill the form to approve the design drawing. By that way, customers will truly confirm the design before approve it. On the discussion, team also decided to provide warranty system to avoid from any customers issue after delivery such as return back cases. 1 year warranty for body and 6 month warranty for motor are provided. From the analysis, a new procedures of sales order processing are made.

**Implement Solutions**

In order to implement the new process flow, all employees have involved. Thisis a key for the success. Meeting is held and all workers are informed. The new process flow is explained and training is provided. The process can be used for all projects. But, time are different depends on project. Workers are train to perform the task based on new process flow without skips. Each related workers must truly understand the process and customers also need to follow the new operations procedures to ensure the effectiveness.

**Check and Monitor Results**

The Check activity clarifies the gap between the plan and actual achievement. After implementation, operations are functioning sufficiently using the methods currentlyadopted. However, there are some employees who do not understand procedures. But, this problem have solved immediately by provided more training. The details results are shown in confirm effectiveness step.

**Standardize Solutions**

Standardization enables high quality production of goods and services on a reliable, predictable, and sustainable basis. In this step, two methods were used which is documentation and training. For example, work instruction sheet are used in order to help employees to perform the new task and as a direction in the case of unusual conditions. This is important to reduce variation in work and standardize the work. This effort of standardization is making sure that important elements of a process are performed consistently in the most effective manner.

**Step 6: Confirm Effectiveness**

In this step, the effectiveness of kaizen steps and problem solving approach is defined by using comparisons between before and after implementation. Time taken with the project conducted without rework or redesign part.

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***Production Lead Times Comparison***

The total lead time of the production processes before improvement is 60.97 hours. After improvement, problems of rework or redesign part were eliminate. Thus, lead times were reduced as much as 9.1 hours become 51.87 hours. This means that, 14.93% of lead times have been reduced. This improvement will save the cost, time and make advantage to company. An increased in the percentage value reflects the production processes is running smoothly as schedule and processes is operating at optimum and effective level. The improvement plans was a success due tothe lead time reducing as in the figure. tothe lead time reducing as in the figure.

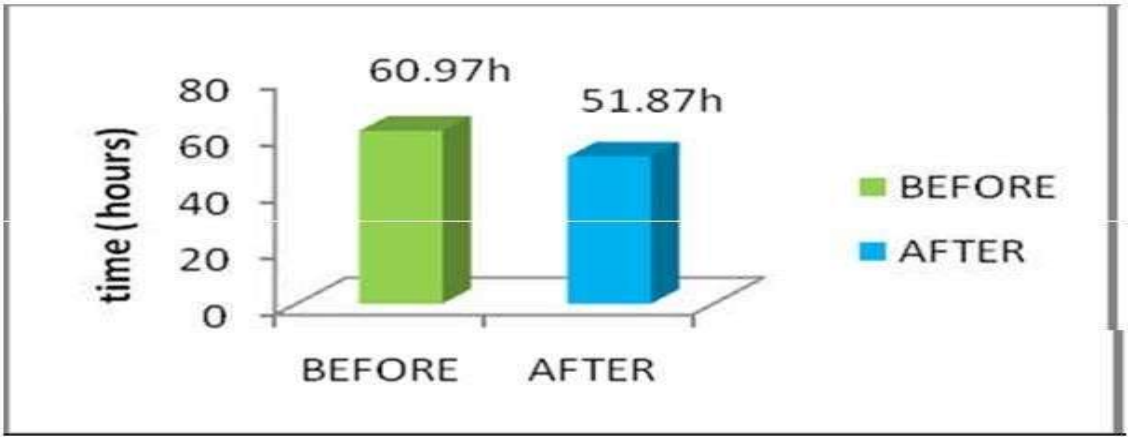



**Figure 2: Production lead time comparison before and after improvements**

**Sales Order Processing Lead Time Comparison**

Figure 3 shows the comparison of sales order processing lead time before and after improvement. As be seen, the results show a reducing the lead time of 6.98% which isfrom 169.81 hours become 157.96 hours. That's mean as much as 11.85 hours have been reduced. If we look at the hours reduced, it is a small value compared to overall time which is 169.81 hours. But, 11.85 hours time is more than one day because of 8 hours working time. That's a long time to waste.




Figure 3: Sales order processing lead time comparison before and after improvements

**Step 7: Follow Up**

In this section, in order to make sure the processes are operating at normal condition even after implementations, some actions have been taken. The actions taken will provide stability and reliability to the improvements that have been carried out. We have specified 3 main actions that can be taken to avoid the problems from recurrence happening. The actions are based on brain storming among members and also discussionamong the workers itself. The actions taken are as follows:

**Check sheet**

The list contains the important steps that must be follows without skipping. The check sheet will be move together with processing flow processes. Each process that havebeen done must mark at the check sheet as token had elapsed that process. This item isnecessary to be added in this step because it acts as a guideline to prevent any skipping due to human error.

**Workers Involvement**

One of the essential aspects in preventing previous false to happen again is by cooperation from co- workers. Workers are highly responsible for the task given. The time spent for processing the sales order and the level of workers involvement in the processare crucial for contributing on time delivery and increasing the customer satisfaction. An employee is responsible to follow the correct work sequences and ethics.

**Top Management Strict Enforcement**

Enforcing the right work attitude is necessary for the positive outcome from the improvements done. Top management staffs must co- operate and enforce the law andensure the workers are performing the work as in the instruction manual. Fine orequivalent terms of punishment should be imposed for errant workers.

## CONCLUSION

The case study conducted at ABC Company is successful. Firstly, the time losses at production was identified which is

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15.48 hours. Then, by using PDCA Cycle and some tools, the root cause was identified and improvement solution was proposed. Finally, the effect of improvement was measured by comparison of lead time before and after improvement. Sales order processing lead time was reduced about 6.98% and production lead time reduced about 14.93%. So, all objective were achieved. Kaizenplays an important role in eliminating losses and waste either in production or nonproduction. A slight improvement of 1% is considered a good improvement in workplace. The most important thing in kaizen is make the improvement continuously.To make the continuous improvement in company, firstly is to set the right mind set.Some of kaizen mindset are such think that everything is can and should be improve, and also should emphasis on process which establish a way of thinking oriented at improving processes, and a management system that supports and acknowledges people's process-oriented efforts for improvement. Besides, to gain success in any Kaizen activities, involvement of top management and workers are very significant as illustrated by this paper. An implementation is worthless if workers don't utilize the full potential of it and also if top management doesn't support any of ideas. A clear and sound target to achieve is lit up first following by steps to achieve it, that's kaizen improvement method. Apart from being a well- known improvement method in Japanese firms, Kaizen is gaining attention from all industries internationally for their companies to strive and maintaining zero waste policy. Kaizen generates breakthrough improvements quickly, without huge capital investments and or extensive commitments of employ time. Company using kaizen find that they not only reduce waste and see immediate results; they also increase productivity, lower costs, and energize employees. Overall, Kaizen project conducted on sales order processing processes at ABC Company have been a success and it contributes for the reduced lead time.

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