

# THE IMPLEMENTATION OF KAIZEN PHILOSOPHY TO IMPROVE INDUSTRIAL PRODUCTIVITY: A CASE STUDY OF ISO MANUFACTURING COMPANIES IN INDONESIA

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**Abstract:** In 2015, the members of Association of South East Asia Nations (ASEAN) established ASEAN Economic Community (AEC) to increase the economic cooperation among its members. This cooperation leads to the opening of free market among ASEAN members, which consequently increases the competition among companies and business enterprises. Implementing ISO 9001:2008 is one of the ways to become more competitive in the business. Companies that implemented ISO 9001:2008 have also applied Kaizen philosophy to increase their productivity, quality, efficiency, and security. This study aims to describe the Kaizen philosophy implementation on 12 companies with ISO 9001:2008 standard. It uses sampling technique that involves 256 respondents from production staff, financial staff, as well as procurement and sales staff. This study focuses on corporate culture (the implementation of Kaizen philosophy), job satisfaction, organizational commitment, and productivity. Likert scale was used to elicit responses from the respondents. The data were then analyzed by using Warp PLS 3.0. The results show that the corporate culture (the implementation of Kaizen philosophy) significantly affects the job satisfaction and organizational commitment. In addition, job satisfaction significantly affects the organizational commitment and productivity. Furthermore, it is also found that organizational commitment significantly affects the productivity.

**Keywords:** Kaizen philosophy, ISO 9001:2008, Productivity.

## 1. INTRODUCTION

In 2015, the members of Association of South East Asia Nation (ASEAN) established ASEAN Economic Community (AEC) to increase the cooperation in economic sector among the members. This cooperation enables the free flow of goods, services, skilled labor, and investment. Consequently, ASEAN members are compelled to open their market and allow the product of other ASEAN countries

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to enter. As a result, the competition among companies and business enterprises are even higher than before. Indonesian companies and business enterprises are gearing up to cope with AEC as they have to encounter local and international competitors. In order to do that, they need to adopt certain model to increase the quality and sustainability of their company. Since the rapid and fluctuating change of the environment increases the risks faced by companies, they try to find a way to maintain their sustainability and to win the market by applying modern approach in their company culture (Rahmanian & Rahmatinejad, 2013).

Cakraborty et. al. (2013) state that the tight international competitions urge the companies to improve their potential to compete with others. Therefore, various strategies to increase the human resources and companies' productivity are needed. Successful organizations and companies tend to apply a systematic approach to increase their productivity and dynamism (Imai, *Gemba kaizen: A commonsense, low cost approach to management*, 2001). These companies will be more sustainable and have higher chance to win the global competition. One of the ways to become a competitive company is to apply quality management system based on ISO 9001:2008 standard. According to this standard, a company has to fulfill or exceed customers' satisfaction in terms of the product's function, quality, and performance. Accordingly, the company should have the best regulations, industrial standard, production process, and results. In Indonesia, the companies that have applied ISO 9001:2008 can show the ability to fulfill or exceed the customer's satisfaction in terms of product's function, quality, and performance. In addition, these companies also adopt kaizen principle, i.e. lean practices. The quality system is improved by lean practices and are compatible with ISO 9001. Furthermore, the ISO 9001 can help sustain kaizen activities (Anjoran, 2013). There is no conflict arises between Lean and ISO 9001 as both are supplementing each other (Micklewright, 2010). Kaizen is not an unfamiliar philosophy as it was introduced by Masaaki Imai in 20<sup>th</sup> century in his book entitled: "*Kaizen: The Key to Japanese Competitive Advantage*" (Imai, *The key to Japan's competitive success*, 1986).

The term Kaizen was first introduced by Imai and has been used in the management context. It is defined as a development strategy which involves all of the personnel in the company, from senior management to operational employees. Kaizen method is one of the basic ways to increase productivity, production system and services, as well as administrative optimism. The Kaizen concept is known as a strategic method which increases productivity, quality, efficiency and safety (Titu, Oprean, & Grecu, 2010). Many companies applied kaizen philosophy because it gives them many advantages. Kaizen was first adopted by several Japanese industries after the World War II to improve quality and productivity. This implementation becomes the essential key for the success of Japanese industries (Womack, Jones, & Ross, 1990). Japanese companies applied kaizen philosophy to maintain their achievements (Maurer, 2004). Imai (2001) states that kaizen has

given significant contribution for Japan's success. The implementation of kaizen values in many companies has given great impact especially in the economization of the operational fees.

Kaizen philosophy has gain a lot of interest from the researchers because it can increase companies' productivity and help them to produce high quality product with minimum effort. Previous studies conducted by Jun et al. (2006), Faris et al. (2009) and Cakraborty et al. (2013) reported that kaizen is used to increase work environment, experience, and method. Kaizen is the efficiency tool to achieve perfection by reducing waste (activities that, from the perspective of the customer, give less or no value) by empowering employees with the time, responsibility, and methodologies to expose areas for improvement and to encourage change. Kaizen also aims to achieve simultaneous improvement and apply economization in the company trough economization principles and tools.

However, some companies failed to employ Kaizen system. Jaca et al. (2010) found that the implementation of kaizen in Spain and Mexico is not very effective because of the low cooperation among the workers and the challenge arises against the change of working environment system. It is in line with Suárez-Barraza & Ramis-Pujol (2010) research that reported the failure of kaizen implementation in Mexican industry. Based on their research, this failure is caused by the resistance of the workers against any change and the lack of monitoring on Kaizen implementation.

## 2. LITERATURE REVIEW

### Corporate Culture (Kaizen Philosophy Implementation)

Kaizen comes from two Japanese words 'kai' which means change and 'zen' which means good. Thus kaizen means better change or a change for better.

Figure 1: The Meaning of Kaizen

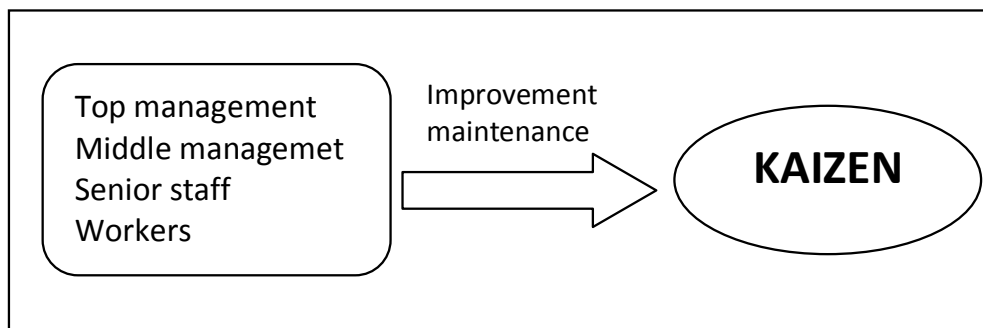


Source: (Futureclean Assured Systems), 2015

There are four characteristics of better change as stated by Khorsand (Rahmanian & Rahmatinejad, 2013):

1. Continuous and inexhaustible
2. Regular and gradual
3. Economical and has minor modification
4. Highlight the public participation (top management to workers)

**Figure 2: Improvements to split between Innovation and KAIZEN**



Source: (Imai, Gemba Kaizen, 2005).

According to Bwemelo (2014), there are five fundamental processes in Kaizen which are known as 5S, i.e. *seiri* (sorting); *seiton* (straightening); *seiso* (shine/cleanliness); *seiketsu* (standardization in the workplace); and *shitsuke* (sustaining self-discipline and promoting a sense of pride in workers in their work and being owners of their responsibility). In addition, it also includes 3M concepts (i.e. *muda* (eliminating the waste); *mura* (eliminating difference); *muri* (eliminating tense) (Rahmanian & Rahmatinejad, 2013).

This 5S concept is basically the process of changing attitudes by improving workplace arrangement, cleanliness, and discipline. It is related to the attitude of how people treat their workplace. If their workplace is neat, clean, and organized, they can work more comfortably. The 5 steps are describe as follows (Kaizen Institute):

1. Sort: refers to the process of sorting out and separating which is needed and which is not in the area.
2. Straighten: concerns with the arrangement of the items in the workplace. It can help people to find the items they need and return them fast. It makes the items ready and easy to use.

3. Shine: refers to the activity of cleaning the workplace and equipment regularly to maintain standards and identify defects.
4. Standardize: the process of revisiting the three previous steps (sort, straighten, and shine) on a regular basis and confirm the condition of the Gemba using standard procedures.
5. Sustain: keep the regulations to uphold the standard and continue to improve every day.

**Figure 3: 5S (Workplace Organization)**

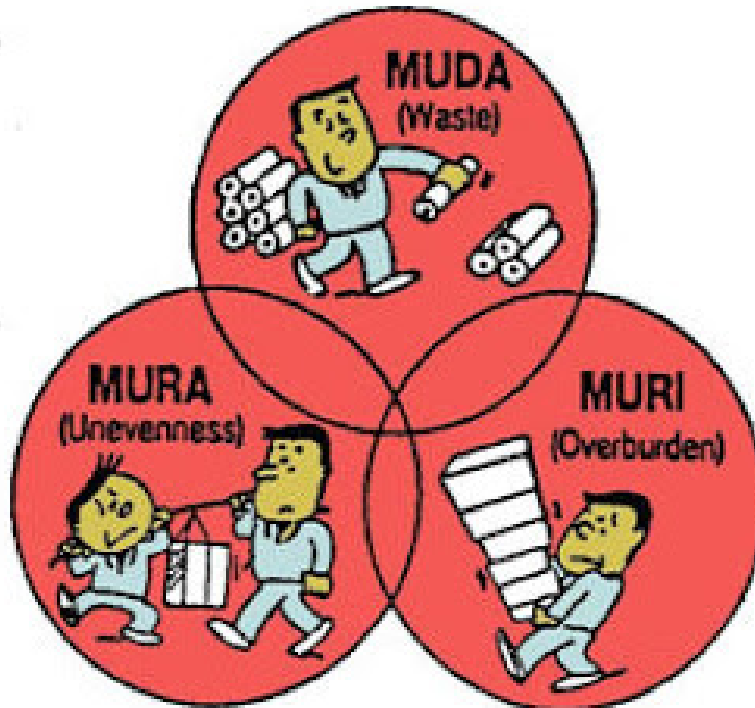


Source: (Kaizen Institute), 2015

Rahmanian and Rahmatinejad (2013) state that 3M concept consists of the following activities:

1. Muda: The elimination of all costly activities which do not produce any value.
2. Muri: The act of combining all activities that are being conducted in parallel style.
3. Muri: The addition of the necessary activities in to the organization's activities to complement and improve service quantitative level.

Figure 4: 3M (Efficiency)



Source: (Aji, 2012)

### Job Satisfaction

Job satisfaction is one of the most substantial indicators of the workers' attitude on their jobs. It can also be the predictor of their work behaviors such as organizational citizenship, absenteeism, and turnover (Mount, 2006). Spector (1997) asserts that satisfaction is people's self-evaluation about whether they like or dislike their jobs. It relates to the values, an including need, and expectations (Buitendach & De Witte, 2005). The salary, relationship, supervisor, task satisfaction, and growth may affect the workers' job satisfaction. Job satisfaction indicates the output that an employee expects to receive and those that they substantively receive. It is related to job characteristics and evaluated based on what employees perceive to be meaningful and important to them. Thus, it can be said that the evaluation of the job by employees is subjective based on the different aspects, and satisfaction around the same factors will be reflected in different levels (Belias, Koustelios, Sdrollias, & Koutiva, 2013).

## **Organizational Commitment**

Organizational commitment can be defined as one's self-identification and level of engagement in his or her organization. It shows one's attitude towards the purpose, aims and values of the organization. Organizational commitment can also indicate one's desire to stay inside the organization and the level of an individual's effort. Although it concerned with behavioral implications, the concept focuses more on how individuals take their relationship with their organization. Furthermore, the attitude of individuals is based on their relationship with their organization (Alhaji & Yusoff, 2012). Commitment is the employees' feeling of credence or attachment to an organization (Muchinsky, 2006). Harrison and Hubbard (1998) states that commitment is also an attitude of the worker towards their organization which forecasts the degree of participation for a worker in an organization. It can be classified into three components, i.e. affective, normative and continuance (Allen & Meyer, 1990). The affective commitment refers to employees' sense of belonging and emotional attachment to the organization. The normative commitment refers to employees' feelings of obligation to remain with the organization and the continuance commitment refers to commitment based on the costs the employees associate with leaving the organization.

## **Productivity**

McNessee (1997) defines productivity as the contribution made towards an organizational and result in the relation to the amount of resources consumed. Therefore, both quantitative and qualitative factors such as goal attainment and work accomplished will be measured. Job productivity expresses the quantity, quality and contribution of a job. Sun (2001) states that the higher the productivity, the higher the performance within the organization. Job productivity is an employee's whole work production, including efficacy, efficiency, and effectiveness (Tsao, Huang, Huang, Chang, & Wang, 1997). The productivity evaluation could be use to set incentives standards so the organizational members can comprehend their contributions and the direction of their efforts. Robbins (2001) proposed that the evaluations of productivity are used to (a) specify the urgency of training and development, (b) evaluate the effects of employees' development and recruitment plan and enact incentive standards, (c) assist personnel decisions such as transfer, promotion, or layoff, and (d) provide feedbacks for employees in order for them to understand how performances are evaluated.

### **2.1 Conceptual Framework**

The Relation between Corporate Culture, Job Satisfaction, Organizational Commitment dan Productivity

Amstrong (2000) states that corporate culture is highly influenced by the workers' attitude. Corporate culture can be define as the unique shared value, ritual, attitude, believe, expectation, socialization and assumption in the company. This paper focuses on the corporate culture of the ISO standard companies that implemented kaizen philosophy principles. These principles are: continuous improvements, customer focus, development of self-discipline, open acknowledgement of the problem, creation of team works, provision of constant feedback to employees and promotion of employee development. Kaizen concepts implementation has given positive effect as a corporate culture (Hook & Stehn, 2008). Kaizen also affects employee's behaviour as it gives them the opportunity to learn new processes. Therefore, it has the potential to transform the culture and behavior of employees, to one that is more proactively efficient (Wiklund & Wiklund, 2002); (Jun, Cai, & Shin, 2006).

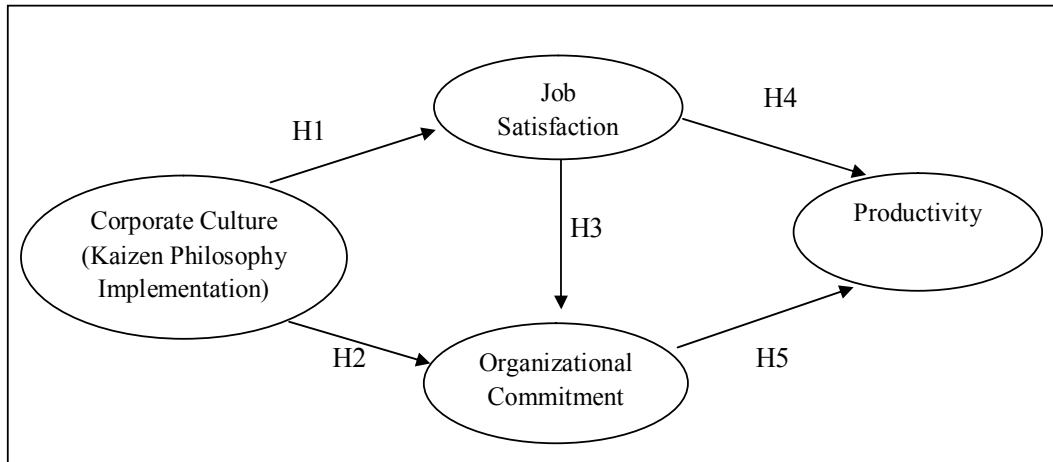
Many researchers found that implementing Kaizen as corporate culture by changing the working method, environment, and attitude can increase the job satisfaction (Nahmens, Ikuma, & Khot, 2012); (Chatman & Jehn, 2001); (Hook & Stehn, 2008). Employees with high job satisfaction generally work more effectively. They also become more productive than those who have low job satisfaction (Naqvi, Ishtiaq, Kanwal, & Ali, 2013). Other researchers such as Huang and Chi (2004) also confirm that job satisfaction plays an important role in increasing the organization's operational performance and making the employees work harder. Thus, when the employee's requirements are consistent with organizational culture, it can motivate the employees to work hard. Overall, it can be concluded that corporate culture affects the employees' working attitude through job satisfaction.

Corporate culture influences the effectiveness of an organization as it affects the way managerial functions, i.e. planning, organizing, staffing, leading, and controlling are carried out. It is also very important in developing and sustaining employee commitment and intensity levels which is often characteristic of successful organizations (Silverthorne, 2004). Employees who have high organization commitment can increase the productivity of the company. Newstrom and Davies (2002) state that organization commitment is the level where employees identify themselves with their organization and actively participate in it. It is found that employees with high commitment are less likely to leave their job. Therefore, it can be concluded that higher the employee commitment, the higher their productivity (Guest, 1991).

The relationship between variables can be seen in the following figure:



**Figure 5: The variables relations**



The hypotheses of this research are as follow:

H1 : Corporate Culture is significantly and positively related to Job Satisfaction

H2 : Corporate Culture is significantly and positively related to Organizational Commitment

H3 : The Job Satisfaction is significantly and positively related to Organizational Commitment

H4 : H4: The Job Satisfaction significantly and positively related to Productivity

H5 : The Organizational Commitment is significantly and positively related to Productivity

## **METHOD**

The purpose of this study is to investigate the relation among corporate culture, organizational commitment, job satisfaction, and productivity. This study adopted the survey research design from 12 ISO 9001: 2008 manufacturing companies in Semarang City, Indonesia. Respondents were selected by using sampling technique which involves a total of 256 samples, range from production staff, finance staff, procurement and sales department staff. They were selected because of their involvement in lean production and their essential role in the topic of this study. Their responses were given in a five level Likert scale ranging from 1= I strongly disagree to 5 = I strongly agree. Corporate culture is measured by how the Kaizen principles are applied by the company. These include 5S

processes (Seiri, Seiton, Seiso, Seiketsu, Shitzuke) and 3M (Muda, Muri, and Mura). There are several instrument used in this study. The instrument to measure job satisfaction is a questionnaire developed by Cellucci and DeVries (1978) which covers questions on salary, relationship, supervisor, job satisfaction, and growth. Questionnaire developed by Meyer, Allen, and Smith (1993) which covers 3 aspects, i.e. affective, continuance, and normative commitment is used to measure organization commitment. In addition, productivity is measured by using three questions about quality, effectivity, and efficiency.

## RESULT AND DISCUSSION

The model was tested by using structural equation approach with WarpPLS 3.0. as the tool. The output shows 3 indicators, i.e. Average Path Coefficient (APC), Average R Squared (ARS), and Average Variance Inflation Factor (AVIF). P-values of APC and ARS indicators are calculated with resampling estimation and Bonferroni like corrections. This is needed because both are calculated as the average parameter. The model is considered fit if the significance level of APC and ARS is below 0.05 and AVIF value is lesser than 5.

**Table 1**  
**Model test result**

<i>Model Fit</i>	<i>Value</i>	<i>Sign</i>
APC	0,354	<0,001
ARS	0,291	<0,001
AVIF	1,330	

The output in table 1 shows that the condition for a good model have been fulfilled, i.e. 0.403 APC value and 0.264 ARS value with 0.05 significance. Furthermore, the AVIF value at 1.258 has also fulfilled the criteria for a good model.

The results of the hypothesis test can be seen in the following table:

**Table 2**  
**Path coefficients and p value**

<i>No</i>	<i>Hypotheses</i>	<i>coefficient</i>	<i>p-value</i>	<i>Description</i>
1	Corporate Culture on Job Satisfaction	0,512	< 0.001	Significant
2	Corporate Culture on Organizational Commitment	0, 397	< 0.001	Significant

3	Job Satisfaction on Organizational Commitment	0.303	0.013	Significant
4	Job Satisfaction on Productivity	0, 195	< 0.001	Significant
5	Organizational Commitment on Productivity	0,363	< 0.001	Significant

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The first hypothesis asserts that the corporate culture influences the job satisfaction. The test shows that the first hypothesis is accepted as the coefficient value is 0.512 and  $p < 0.001$ . This means that kaizen values implemented by the company are indeed affected the job satisfaction of all the employees. Kaizen principles encourage the employees from various levels to improve their skills and develop their talents. These kind of personal development opportunities can significantly improve the job satisfaction. This argument is supported by the previous research conducted by Nahmens, et al (2012), Chatman et al (2001) and Hook et al (2008), as they found that Kaizen corporate culture improves employees' job satisfaction through various method alteration.

The statistic test also shows that the second hypothesis, which claims that corporate culture affects the organization commitment, is accepted with 0.397 coefficient value and  $p < 0.001$ . This means that Kaizen values implemented by the companies contributes to the increasing organization commitment of all the employees. By implementing kaizen principles, employees give positive reactions to their company. This will ultimately affect the company's activities and make them better. This result confirms Silverthorne's (2004) statement which stated that corporate culture increases and strengthens employees' s commitment to their company.

The third hypothesis states that job satisfaction positively affected organizational commitment. The result of the test shows that this hypothesis can be accepted (coefficient 0.03 and  $p = 0.013$ ). It indicates that employees with high job satisfaction tend to have high commitment and loyalty towards their company. This result is in line with Mathieu & Zajac (1990), Williams and Hazer (1986) who stated that job satisfaction is an antecedent of organizational commitment. Employee's orientation toward a specific job precedes his or her orientation toward the entire organization.

The fourth hypothesis states that job satisfaction affects productivity. This hypothesis is accepted with 0.195 coefficient value and  $p < 0.001$ . It proves that the higher the job satisfaction, the higher the performance and the productivity. This result confirms Naqvi et.al. (2013) as well as Huang and Chi (2004) previous research which stated that when the employees have a high job satisfaction, they

will work harder to achieve the company's goal. Thus, it can be concluded that the company's productivity increases when the employees feel satisfied and comfortable with the company's condition.

The result of the analysis also proves that the last hypothesis, which states that organization commitment affects the productivity, is accepted with 0.363 coefficient value and  $p < 0.001$ . Organization commitment is one of the most important parameters to see the employee's tendency to stay as the member of the organization. With high organization commitment, an employee tends to be more professional and respectful towards the principles of the company. As a result, his or her productivity will also increase. This result verifies Guest's (1991) and Newstrom and Davies' (2002) argument which stated that employees with high organization commitment are less likely leave to leave the company so they can increase the company's productivity.

## CONCLUSION

This research focuses on the implementation of Kaizen philosophy as corporate culture in several manufacturing companies in Indonesia. The results show that the corporate culture adopting Kaizen philosophy can significantly influence the job satisfaction and organization commitment of the employees in all levels. In addition, the job satisfaction and organization commitment also influence the company's productivity. The results also show that the implementation of Kaizen increases the company's productivity and helps the company to produce high quality products with minimum effort. The objects of this study are companies that applied ISO 9001:2008. So, it can be conclude that Kaizen is highly related to ISO 9001:2008 as it gives positive contribution on the ISO 9001:2008 implementation. Companies that applied ISO 9001:2008 in Indonesia can compete and face challenges in free market, especially ASEAN Economic Community (AEC).

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