Application of Kaizen in Vietnamese Small and Medium Manufacturing Enterprises — Case Study of CNC-VINA Joint Stock Company

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Abstract: Continuous improvement — kaizen is a Japanese concept that could help enterprises eliminate wastes, self-complete, and strengthen company capability. In Vietnam, there are many companies; especially Small and Medium Enterprises have applied Kaizen as a strategy to enhance their performance and management activities. In order to examine how this new concept would be applied for Vietnam Manufacturing Small and Medium Enterprises (MSMEs), this paper selected special case of Vietnam CNC and Technology Application JSC Joint Stock Company (CNC-VINA) to investigate. The main purpose is to understand benefits and difficulties that company is facing for Kaizen implementation. Firstly, the study summarized the theory of Kaizen. Secondly, the paper analyzed application of kaizen in business context of a Vietnamese MSMEs through specific case of CNC-VINA Joint Stock Company. Furthermore, the author also figured out common problems and recommended solutions for Vietnamese companies who would like to implement successfully Kaizen method.

Keywords: Kaizen, improvement, MSMEs

1. Introduction

The demand of sustainable development and changes in consumption behaviors challenge enterprises in the 21st century. Enterprises would like to grow harmoniously among environmentally friendly production, improvement productivity and quality. “Change for better” is the way that many managers over the world have applied to create a difference for their products and services. The purpose is to maximize customer satisfaction, reduce production costs and cut wastes. The continuous improvement is also known as the kaizen’s concepts.

Kaizen is a Japanese word means “continuous improvement”. Kaizen is combined from two Chinese characters: “Kai” (改) means “change” and “Zen” (善) means “for better”. The combi-
nation of the two parts implies for continuous improvement. In Japan – hometown of this philosophy, Kaizen is not only the ideology of business persons, but also the mind-set and methodology that reflects the way people react with the movement of society - the way Japanese live and work. In Zen, kaizen is also considered as a philosophy that guiding people in their life (Imai, 1986). More than the translation of "continuous improvement", kaizen implies the movement toward effort to change for better that includes participation of everyone, every time and everywhere (Imai, 1997). In business, Japanese companies had apply kaizen philosophy for long time and exploited it as competitive advantages to come ahead over competitors. Starting from the theories of Deming cycle of PDCA (Plan-Do-Check-Act) as four steps of continuous improvement (CI) (Waston M, 1986), this philosophy had been developed by Japanese as Kaizen ideas and has been practiced successfully in Japanese companies (Imai, 1986). The Toyota Motor is an excellent example in practicing kaizen as core values that create strength over competitors during 20th Century through Toyota Production System (TPS) (Taiichi, O, 1988). After the successful of Japanese companies, kaizen concept had been introduced to the world. Western enterprises such as Nissan Motor also has learned and practiced kaizen since 1990. They has emphasized the role of teamwork and communication between the staff and the manager that will affect quality and flexibility of kaizen team work (Wickens P D, 1990). Recent years, many enterprises in Eastern countries have also been practicing kaizen. In China, together with business expanding of Japanese enterprise, kaizen philosophy is also transferred cross-national borders. Due to the business context in China, experience from Japanese oversea plants who applied kaizen actively, used team-based rather than individual-based suggestion schemes and practiced human resource management that emphasized long-term employment. Furthermore, they conducted shop floor visit to check work process every day (Katsuki, A, 2007). In Thailand (Pratived. K, 2009) and in India (Rajesh. G et al, 2012) kaizen is also practiced in some Small and Medium Enterprises (SMEs). This is first stage of SMEs in developing countries where kaizen is considered as business culture and conditions. This implementing process still have some problems or did not successes so that they share experience for other companies to apply kaizen more effectively.

In Vietnam, kaizen has also been introduced and practiced in certain enterprises. Thank to the similarity in culture and managing style, Vietnamese managers can take advantages of kaizen in managing business operation. However, in order to implement successfully like Japanese enterprise, they have to overcome some challenges (Do, T L, 2010).

2. Research context and methodology

2.1 Research context

In Vietnam, Manufacturing Small and Medium Enterprises (MSMEs) are facing many difficulties and challenges. Most of them have small capital, small scale of production (number of employees less than 300 and capital less than 100 billion VND) and located in the rural and mountainous areas. Thus, ability to access capital and new technology is limited for them. Besides, many MSMEs have low labor skills, lack of professional management. Therefore, the competitiveness of these enterprises is not high. In 2012, according to a survey conducted by the General Statistics Office, main reasons of company’s bankruptcy and dissolution are losing produc-
tion, lacking of capital and not consuming products. Particularly, the survey showed that 70% number of companies is operating inefficiently and nearly 30% of firms are having difficulty in raising capital. This number has shown the lacking of efficient management methodologies.

However, with a small and flexible scale, many MSMEs were relatively successful in changing and applying new methods of management. The change helps enterprises not only to continue surviving but also to expand the business over this difficult time. Kaizen methodology focuses on people and human efforts, increases capability from small and incremental improvement and does not need much investment in capital. Thus, kaizen would be considered as most suitable strategy for SMEs.

### Figure 1 The benefits of Kaizen to MSMEs

<table>
<thead>
<tr>
<th>Limited capability</th>
<th>Kaizen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited capital</td>
<td>Cheap and do not need much investment</td>
</tr>
<tr>
<td>Limited human resource</td>
<td>Focus on people and exploit human ability</td>
</tr>
<tr>
<td>Small scale</td>
<td>Take advantages of small group working</td>
</tr>
</tbody>
</table>

#### 2.2 Methodologies

**Selecting case study**

CNC-VINA is one of MSMEs located in Hanoi that implements kaizen, 5S and others tools in Lean manufacturing system such as TQM, visual management, etc. These methodologies have been applied for five years. CNC-VINA received supports from many organizations for training and consulting activities, for example the Agency for Small and Medium Enterprise Development and JICA about 5S, kaizen, TQM.

CNC-VINA is a company that received official and systematic training directly from the experts from consulting domain. Moreover, being located in Tu Liem industrial zone of Hanoi helps company to take advantage in approaching information and updating new technologies and new policies. CNC-VINA is considered as a company that had some ideal conditions and a typical example of a Vietnamese MSMEs, such as: receiving the best training, an easy approach to updated information about economics policies and market movement. Hence, this research would like to select case of CNC-VINA as lesson for other companies that want to implement kaizen in the future.

**Research diagram**

This research follows the research framework. Specifically, for the situation of manufacturing enterprises, the authors used qualitative questionnaire and quantitative survey, and the knowledge from literature review to answer the research questions (figure 2) through three stages.

In the first stage, the author collected data about kaizen. There are two kinds of data: primary data from doing interview in workplace of enterprises and secondary data from studying literature review. This information will be ana-
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Application of kaizen: case study of CNC-VINA SJC

Literature review

Interview

Data analyze

Stage 1

Stage 2

Problem statement

Solutions

Stage 3

No

Check with specialist

Yes

Recommendation

Conclusion

Figure 2  Research framework

kaizen activities in a MSME, both semi-structured interview and questionnaires were used. The survey consists of 35 multiple-choice questions and is divided into four parts related to kaizen activities and its effectiveness to company operation and business activities. All of these questions are designed in Vietnamese and include four parts.

Table 1  Content of survey

<table>
<thead>
<tr>
<th>No.</th>
<th>Issues</th>
<th>Number of question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kaizen activities in company</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>Effect of kaizen to operation activities</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>Effect of kaizen activities to business result</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>Factors that affect improvement result</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>34</td>
</tr>
</tbody>
</table>

The measurement is based on a 5-point rating scale with corresponding to 1 = strongly disagree; 2 = somewhat disagree; 3 = neither agree nor disagree; 4 = somewhat agree; 5 = strongly agree to answer in these 34 opinions. Besides survey, in order to understand deeply this case, the study used semi-structured questions for personal interview. The questionnaire contains some common questions and some open-ended questions with no limits for the answer. Due to variety of positions, questionnaire is designed flexible with three types of questions named A, B, and C for managers and workers (table 2).

The number of participation in this interview was ten. They come from different position and departments but most of them work in workplace. Representatives for each group of participants have long time of working and experience in CNC-VINA. In addition, they have kaizen mind-set or took part in Lean project.

Data collection

This study is not only to observe but also to investigate for factors that affect effectiveness of
Table 2  Content of questionnaire 2

<table>
<thead>
<tr>
<th>No.</th>
<th>Responder</th>
<th>Number of question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Manager (group A)</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Workers (group B)</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Office employees (group C)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 3  Number of responder

<table>
<thead>
<tr>
<th>Department</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machining</td>
<td>2 manager</td>
</tr>
<tr>
<td>Electrical assembly</td>
<td>1 manager</td>
</tr>
<tr>
<td>Assembly</td>
<td>2 managers</td>
</tr>
<tr>
<td>Maintenance</td>
<td>1 manager</td>
</tr>
<tr>
<td>Project analyze</td>
<td>1 officer</td>
</tr>
<tr>
<td>QC</td>
<td>1 manager</td>
</tr>
<tr>
<td>Designing</td>
<td>1 officer</td>
</tr>
<tr>
<td>Purchasing</td>
<td>1 officer</td>
</tr>
</tbody>
</table>

Data analyze

The assessment of the result of Kaizen activities based on the benefits of such activities will contribute for company. Due to the limitation in number of survey and responders, this study analyzed mostly as qualitative data. Besides, to support for research results, the authors conducted some quantitative analysis based on the result of survey from ten answers from managers in different department of CNC-VINA. Statistical methods, regression analysis, were used to determine correlation among issues and to analyze the data.

3. Application of kaizen in Vietnam CNC And Technology Application Joint Stock Company (CNC-VINA)

After five years of development, CNC-VINA has developed successfully kaizen philosophy from bottom level of individual-oriented kaizen by establishing KSS and easy kaizen summiting process through kaizen suggestion form; group-oriented kaizen with lean project and kaizen philosophy in management strategy (figure 3)

Together with 5S and visual management, employees knew about concept of kaizen and procedure of proposing improvement idea through training programs. There are many training programs about 5S and kaizen for employees, in each program, CNC-VINA sent some (from two to three) employees to take part in course. After that, they do re-train to other employees after their training. Training class is divided into small groups so that transferring information is more effective.

Every employee is trained so that they could understand that kaizen is small and incremental improvement. Workers who do directly the job would understand what need to improve in their position, in machine, and that what making improvement will help their job become more convenient. Having right strategy in kaizen implementation from the beginning, managers used basic support tools of PDCA, KSS (kaizen suggestion system), and QC (quality control) activities to facilitate the implementing process.
**3.1 PDCA**

In CNC-VINA, the production process includes four phases of Deming cycle. The process starts by receiving order; the order is transferred from Project department to Mechanical engineering Design Dept. After designing, required material list is moved to Purchasing dept. These activities belong to Plan phase. Next, in Do phase, bought material and tools are machined in Machining Dept., and then the QC Dept. will check for quality of items or parts and transfer them to Electrical Assembly Dept. or Assembly Dept. to assembly. After this process, the quality of machine is tested and checked whether it matches customers requirement or not before packaging and delivery finished products to customers.

![Figure 4 The practiced PDCA cycle in CNC-VINA](image)

In check phase, QC department plays an important role to ensure quality through checking in purchased material, machined items before last process of assembly. QC Dept. and Maintaining group also have responsibility in checking 5S activities as well as detect wrong or defect and propose recommendation to others department so that problems are solved and reach deadline of production. From the production diagram of CNC-VINA, we can see the continuous of P, D, C, A with starting and ending point are customers.

**3.2 5S**

In CNC-VINA, 5S activities are also practiced as basic for doing any improvement. Starting from beginning as kaizen, it can be said that company applies 5S with strong commitment of leaders – board of management. Starting from educating, there are two first employees had took part in training course about 5S supported by SME Technical Assistance Centre Hanoi had provided training for others. Company planed 5S practicing through six stages:

1. **Training about 5S with real example**
   - Training 5S to all staffs thoroughly

2. **Managers practice 5S**
   - The exemplary manager at the factory is very important

3. **Practice Seiso (Shine)**
   - Seiso mean always look at, care and pay attention

4. **Practice Seiri (Sort)**
   - Definitely remove unnecessary items

5. **Practice Seiton (Straighten)**
   - Easy to put on, easy to remove, easy to use and relay

6. **Check 5S**
   - Establish principles and standard to check 5S regularly

![Figure 5 5S Practicing steps in CNC-VINA](image)

After five year successfully implementing 5S, CNC-VINA takes it as advantages to continue practice other advance operation and man-
agement methodologies such as kaizen, lean, TPM... Company practiced 5S- Sort, S2- Straighten, S3- Shine and have maintained them for five year as a habit and integrate 5S principle in working procedure that every employee has to follow. Doing 5S is the required activities in every Dept. in ten minutes before finishing a day work.

After that, in next morning, before starting work maintenance employees also have responsibility to check 5S result of each Dept. Office group and workplace group have their own 5S checking team, respectively. These teams do cross-checking every week follow standards and send request to Dept. that have errors to improve. Member of 5S team comes from different Depts. to ensure the fair.

3.3 Kaizen Suggestion System (KSS)

In CNC-VINA, employees understand that Kaizen implies for small and incremental improvement in work. Employees are also motivated to propose their improvement ideas to upper staffs. Based on the effectiveness of improvement, company has incentive and bonus for kaizen idea. Focusing on individual idea to improve current situation of machine or working condition, employees understand the meaning of “change for better” and harmonious benefits of employees and company.

Thus, in CNC-VINA, workers are encouraged for small improvement by incentive with small amount of money: from 30,000 VND to 300,000 VND based on usefulness of idea. To support for idea submission, company provides form and employees summit them for their managers. The managers will analyze the benefit of improvement and propose it to upper managers or directly to board of director. This suggestion system of Kaizen has successfully transferred many small kaizen ideas into real improvement.

3.4 Lean project or Kaizen group activities

As defined, Quality Control Circle is small group of volunteering employees and managers that are responsible to control product quality, provide training and develop kaizen activities as well as conduct continuous improvement project in company.

In CNC-VINA, after five years practicing 5S, kaizen, visual management, since 2012, under supporting from Vietnam Productivity Center (VPC), company started building Lean project or Kaizen group activities to improve the effectiveness of current project, reduce assembly time and reduce errors of design. The project began from October 2012 to June 2013 and included three small projects conducting by three groups:

- Group 1: designing Dept. - Reducing designing time and errors;
- Group 2: workplace - reducing assembly time and match deadline;
- Group 3: purchasing Dept. - controlling inventory and time material received.

Middle managers and employees from Machining Dept., Assembly Dept., and Electrical Assembly Dept. and officers took part in the project to find out solution and do improvement for reducing assembly time. The Lean project of group 2 conducted follow five stages.

After seven months, project completed two issues:
- Finding roots of finishing assembly late and propose solutions
- Finding parts in assembly process that needs to improve

Firstly, author defined problems through checking problems record made by worker ev-
Define problems and collecting information

Analyze problems to define roots

Propose solutions for each reason

Do solutions

Evaluate results

Figure 6  Five steps in Lean project of group 2

ey day and collecting data from working reality, visualize assembly process and classify value-added and non-value added activities. Moreover, members used 5whys diagrams to find out the roots of problem, the late of finishing assembly, and then propose solution for each reason.

3.5 Kaizen philosophy in management strategy

In every organization, managers always play important role in creating and shaping characteristics as well as success of organization during implementing new strategy period. The role of leader in kaizen strategy is forward future of company starting from caring thorough small activities and think about long-term strategy.

Thus, this role is represent through effluence to others-employees so that they understand and volunteering to develop and propose kaizen ideas or had desired to try to reach the target.

3.6 Effect of kaizen activities

CNC-VINA introduced Kaizen to every employee but mostly focus on workplace where problems often occur and have mostly of waste. After implementing kaizen activities, it provide positive effect to operation activities such as reduce rate of mistake in machining and assembly, reduce inventory and time of assembly, increase safety in working place, investigate and solve problems quickly.

In general, kaizen activities also have effect

Table 4  Effect of kaizen to operation activities

<table>
<thead>
<tr>
<th>No.</th>
<th>Issues</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>STD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reducing errors in machining items</td>
<td>1.00</td>
<td>5.00</td>
<td>4.67</td>
<td>0.52</td>
</tr>
<tr>
<td>2</td>
<td>Reducing defects</td>
<td>1.00</td>
<td>5.00</td>
<td>4.67</td>
<td>0.52</td>
</tr>
<tr>
<td>3</td>
<td>Reducing wastes, inventories</td>
<td>1.00</td>
<td>5.00</td>
<td>4.67</td>
<td>0.52</td>
</tr>
<tr>
<td>4</td>
<td>Reducing time of machining and assembly</td>
<td>1.00</td>
<td>5.00</td>
<td>5</td>
<td>0.00</td>
</tr>
<tr>
<td>5</td>
<td>Reducing time of investigating and solving problems</td>
<td>1.00</td>
<td>5.00</td>
<td>5</td>
<td>0.00</td>
</tr>
<tr>
<td>6</td>
<td>Increasing safety in workplace</td>
<td>1.00</td>
<td>5.00</td>
<td>5</td>
<td>0.00</td>
</tr>
<tr>
<td>7</td>
<td>Reducing travel time of material and semi-finished products among department</td>
<td>1.00</td>
<td>5.00</td>
<td>4.83</td>
<td>0.41</td>
</tr>
</tbody>
</table>

Table 5  Effect of kaizen activities to business result

<table>
<thead>
<tr>
<th>No.</th>
<th>Issues</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>STD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reducing cost of production</td>
<td>1.00</td>
<td>5.00</td>
<td>3.57</td>
<td>1.13</td>
</tr>
<tr>
<td>2</td>
<td>Providing more competitive price than component</td>
<td>1.00</td>
<td>5.00</td>
<td>3.57</td>
<td>0.98</td>
</tr>
<tr>
<td>3</td>
<td>Increasing number of orders</td>
<td>1.00</td>
<td>5.00</td>
<td>4.57</td>
<td>0.53</td>
</tr>
<tr>
<td>4</td>
<td>Increasing customers satisfaction</td>
<td>1.00</td>
<td>5.00</td>
<td>4.14</td>
<td>1.07</td>
</tr>
<tr>
<td>5</td>
<td>Reducing delivery time</td>
<td>1.00</td>
<td>5.00</td>
<td>4.17</td>
<td>0.98</td>
</tr>
<tr>
<td>6</td>
<td>Expanding company business</td>
<td>1.00</td>
<td>5.00</td>
<td>4.67</td>
<td>0.52</td>
</tr>
<tr>
<td>7</td>
<td>Providing better function for products</td>
<td>1.00</td>
<td>5.00</td>
<td>4.67</td>
<td>0.52</td>
</tr>
<tr>
<td>8</td>
<td>Providing better customers care quality</td>
<td>1.00</td>
<td>5.00</td>
<td>4.83</td>
<td>0.41</td>
</tr>
</tbody>
</table>
to whole the business of company such as reducing some kind of cost in operation, number of order increase as well as increasing customer's satisfaction.

3.7 Experiences from Vietnam CNC and Technology Application JSC (CNC-VINA) about apply kaizen

Starting from training

Kaizen is a new philosophy coming from Japan. Therefore, the number of company practicing kaizen is still limited. Besides, in order to get benefit from this concept, companies usually apply kaizen together with other management methodologies such as 5S, visual management, TQM...Especially, kaizen is applied flexibly based on company condition. Focusing on people, human intelligent and taking advantages of small and incremental improvement, kaizen is cheap and useful method. Besides, in successful implemented companies, kaizen brings long-term and sustainable benefits. Therefore, in order to apply kaizen successfully, a crucial factor is human-center of improvement. They need to understand deeply and clearly about its concept. Firstly, managers are people who understand about kaizen so that they can introduce, promote and attract employees to take part in kaizen activities voluntarily. CNC-VINA regularly trained 5S, kaizen for employees. Company assigned responsibility is clearly for individual in order to ensure the effectiveness of training and introducing kaizen to every employees.

Emphasizing the role of leader

In organization, managers are in charge of guiding, leading, creating enterprises culture. In order to implement and maintain the effectiveness of kaizen, in Japanese companies, kaizen had become part of company's culture. Therefore, in Vietnam, practicing kaizen as a feature of organization culture is a factor that ensures for sustainability of kaizen philosophy. To do this, managers play crucial roles. In CNC-VINA, board of managers had directly assessed kaizen activities and rewarded for good ideas, supervised kaizen group activities and helped employees to find out roots of problems as well as to propose solutions. Leaders helped employees to do right, not only think and just tell them what need to do. Although they did not adapted kaizen as a feature of company culture, CNC-VINA managers had shown up their vision toward future and strong commitment implementing kaizen together with employees. This important factor brings up success for CNC-VINA in the first time implementing kaizen.

Building organization culture

The culture of company always is reflected through the working habit and characteristic of employees. With mostly are young staffs, CNC-VINA had create enthusiastic and open atmosphere of sharing experiences from top managers through directly working and sharing, especially in improvement project so that bring success to company from beginning time of implementing kaizen. Besides, the information is exchanged clearly among different departments.

Therefore, controlling operation activities and quality problems could be more convenient. Due to detecting mistake or problems quickly, doing improvement also is more effective.

Based on combination between observe reality in workshop and doing interview with people taking part in kaizen group project, there are some factor that affect results of kaizen activities (Figure 7)

These factors are divided into four groups: strategy (company preparation that include pre-
paring in budget and planning; process (human related factors); training; managing and system (company procedure, culture). This analyze is based on results from interview ten members of Lean project group 2 in ten factors:
- Budgeting preparation before doing improvement;
- The roles of top manager/board of directors in leading kaizen project;
- The roles of middle managers in guiding kaizen activities;
- Experiences and working background of employees;
- Education level of employees;
- Incentive policies for kaizen activities;
- Influence of training program content; training in small group;
- Opening culture inside company;
- Work attitude of employees.

4. Suggestion

This research analyzed specific problem of CNC-VINA, small and medium company. Therefore, proposed solutions in this study are suitable for CNC-VINA case. However, other companies still can refer experiences from this research.

4.1 Rational allocation of resources and effective training

In CNC-VINA, they received support from Vietnam Productivity Center (VPC) - experts about 5S, kaizen. However, the project has been delayed and behind schedule due to above-mentioned reasons. In order to increase effectiveness of lean project, the information exchange as well as discuss time among members need to increase. In addition, beside managers, lean project need get participated by young workers to take advantages of both experiences of managers and enthusiastic of young people.

4.2 Maintain the KSS to attract employees in doing improvement

The benefit of KSS is creating incentive for doing Kaizen in company. When doing interview, every responders agreed about the role of encouraging policies in attracting employees doing kaizen and effectiveness of this activities. Depending on the extension and impact of improvements in business activities as well as current situation, company can provide financial support or other incentives. These policies will help to raise responsibility of employees and stimulus for personal effort in jobs.

4.3 PDCA cycle in Do phases

Every phase in PDCA cycle is important and necessary in continuous correlation. Paying attention and understanding the position of performers will help improve jobs effectiveness. Moreover, worker built gradually habits of careful consideration, checking and doing improvement, if necessary, while working. This cycle
creates kaizen mind-set for workers. The defect and problems also can be detected and solved before they are transferred to next process. To reach this achievement, company set up quality control right in working procedure. This is considered as responsibility of each worker. Thus, principles gradually make up checking habit for employees and increase effectiveness of jobs.

4.4 Kaizen implementing model

In order to increase effectiveness of kaizen implementing, the kaizen model present correlation between kaizen and company business activities such as: planning strategy, training to employees, establishing working principle to remain operation and business system of company, process of jobs flow or solving problems, and management activities. Among these factors, human is the most important factor and the center of these correlations that affect results of kaizen (Figure 8).

The first correlation is people-strategy. In order to implement kaizen, the first step is to plan specific implementing kaizen strategy. The relationship between people and strategy reflects vision and strategic orientation of managers when apply new methodology in operation or management. Because kaizen is long-term tactic, it requires strong commitment of managers to implement and maintain for a long time. Thus, this correlation reflects the role of leaders in guiding and planning kaizen activities and projects.

The second step is doing training for employees. It is shown through correlation people - training. People is the center of kaizen concepts therefore, it is necessary to provide training about kaizen for everyone inside company so that they can understand benefits of kaizen, and create kaizen spirit – ready to doing improvement – in workplace.

Managers build up company culture, and employees maintain it. In order to remain kaizen result, we should integrate kaizen into company culture. Kaizen culture also reflects responsibility and desire for work. Therefore, training is not only to train about kaizen, but also to increase knowledge and to connect employees with company culture. From the CNC-VINA experience, company should provide training kaizen in small group to improve effectiveness of education.

The third relationship is people – system. The system works as energy to help firm run business. People make up and maintain systems inside company and system ensures people working under jobs framework and standard. To do kaizen, this system firstly needs to be standardized. "No improvement without standard", therefore the third steps of implementing kaizen is standardize all current principle and working results to check quality and detect errors easier. These current standards also create basic for new standard improvement.

The fourth relationship is people – process. The process in a company is reflected in flow of
material in production line from customer order to finished product, and flow of information among department from customer order to customer remaining. People take part in and create every operation process and business. Therefore, doing kaizen not only makes change in people thinking and working attitude, but also makes change in process through reducing unnecessary or non-value added activities. In implementing kaizen process, the KSS also is essential and should be clear so that it is easier to express and asset kaizen idea.

The fifth relationship is people – managing. This reflects maintaining kaizen as part of company. This factor is shown through working attitude of employees and effect of kaizen spirit inside company. Managers are responsible for controlling improvement, controlling people so that they always design and create for jobs and control kaizen result for a long time.

Maintaining kaizen activities and its results is the last relationship. In another words, it is aimed to remain kaizen spirit as working habit and routine of employees. To do this, kaizen need to be encouraged gradually and frequently. Open atmospheres, easy sharing and free expression among employees and in teamwork, when doing kaizen group is necessary.

The fifth relationships represent important tasks when implementing kaizen. This also has strong and continuous correlation that never ends with effort of company and commitment of board of directors. Because it is a philosophy, whenever it is osmotic inside company, kaizen will unleash fully it effect.

5. Conclusion

Kaizen philosophy is “continuous improvement” to enhance business performance, increase productivity, reduce defect and start moving forward from the current scale. Kaizen focuses on human efforts, believes that small change will make up a big success. CNC-VINA is one of few small and medium enterprises that practice kaizen in management and operation. The paper firstly summarizes information about implementing kaizen from literature review.

Secondly, this research represents kaizen activities in CNC-VINA based on observation and interviewing employees that take part in kaizen projects and identify what are difficulties that companies are facing when implementing kaizen as well as their causes. Finally, this study proposes some suggestion to solve problems and help companies to apply kaizen projects more effectively.

Using study theories and testing in reality, this research mostly based on qualitative data from personal interviewed members of lean – group oriented kaizen project. This paper investigated three factors that affect the result of kaizen activities: human problems, training and company culture. Among them, human problems imply the roles of managers in making policies related to kaizen and committing in doing kaizen for long-term. Kaizen training also needs to be done continuously.

The third factor affecting the result of kaizen activities is company culture. An open space to exchange information and share opinions inside the company will increase teamwork and result of kaizen ideas. Based on this analysis, the paper finally proposes some recommendations to increase effectiveness of implementing kaizen in CNC-VINA, as well as to give experience for others companies who want to practice kaizen.

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