

Assessment of kaizen implementation and challenges toward
sustainability

(In case of Hibret Manufacturing and Machine Building Industry)

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Abstract

Kaizen is originated from Japan to be applied in the improvement of productivity, quality, efficiency and also it is way of thinking, working (performing), fixing in the attitude and value of organization. As Ethiopian government proclaimed kaizen is a tool of change and focused in some 30 organization beginning to apply. But not much has been done on assessing implementation and challenges toward sustainability of kaizen in HMMBI. The purpose of this paper is to examine current status of kaizen implementation, challenges, and sustainability towards implementation of kaizen. In addition to this, the study focused on identifying the factors affecting, analyzing the achievements, challenges and opportunities of kaizen implementation. To achieve the above objectives descriptive research design was selected and used to gathered primary and secondary data. The selected sample was purposive sampling method; primary data were collected from survey questionnaire, in depth interview and self – observation technique. Secondary data were collected from different published and unpublished documents. The respondent from different department of the factories have been involved for the questionnaires whereas interview were made with kaizen steering committees and observation is done by the help of kaizen promotion officers and the researcher has made deep industrial visit. The data gathered through questionnaires revealed that kaizen implementation in HMMBI is not sustained because of lack of employee and management commitment, lack of training system, lack of management encouragement, less management and employee involvement and lack of active participation. So in order to sustain kaizen implementation, carrying out continuous process practice is necessary for management personals and workers. Therefore, the sustainability of kaizen implementation needs continuous follow up process which includes: strategical planning, performance measurement, and knowledge and change management.

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Acronym

EKI: - Ethiopian Kaizen Institute

GTP: - Growth and Transformation Plan

SDPRP: - Sustainable Development and Poverty Reduction Document

METEC: - Metal and Engineering Corporation

HMMBI: - Hibret Manufacturing and Machine Building Industry

GEMBA: - Working Area

GEMBUSTU: - Working Material or Machine

GKW: - Gemba Kaizen Workshop

CI: - Continues Improvement

SWOT: - Strength weakness Opportunities and Threats

EFDR: - Ethiopian Federal Democracy Republic

JICA: - Japan International Cooperation Agency

SADC: - Southern African Development Community

PPC: - Production Planning and Control

CHAPTER ONE

1. INTRODUCTION

1.1 Background of the study

Ethiopia has launched the 5 years strategic Growth and Transformation Plan (GTP) in 2010 and GTP II in 2015, with the development agenda of sustainable, rapid, broad based and equitable economic growth. With the aim of sustaining the rapid growth momentum and achieving the planned target; it is imperative to increase the productivity of agriculture and expand investment in the industrial sector (particularly in manufacturing industry) in the remaining years of the GTP II (MOFED, 2013).

The GTP framework has seven strategic pillars for sustaining rapid, broad based and equitable growth based on pro-poor and pro-development policies and strategies. As mentioned in the Sustainable Development and Poverty Reduction Document (*SDPRP, 2002*) the Government of Ethiopia gave utmost attention to industries like small, micro and medium enterprises in particular, and large scale enterprises in general to scale up the manufacturing sector activities of the country and to begin industrialization process.

So in order to improve the productivity of the manufacturing sector industries must use manufacturing philosophies such as kaizen. Kaizen is a tool used for change, problem-solving and is people-oriented process. It has been defined as any process of continuous improvement in any area of life: personal, social, home or work, and when applied to the workplace kaizen means continuing improvement involving everyone to managers and workers (Imai, 1991). Increasing competition calls for business organizations to devise ways of improving their competitiveness in the ever-changing global market. One of the ways organizations and firms can improve their competitiveness is by improving effectiveness of their systems. Kaizen which was originated in Japan in 1950's is one of the means that has been used widely especially in Asia to improve elements associated with the effectiveness of business organizations, with benefits already well documented (Mureithi, 2013).

Ethiopia has proved that the Japanese kaizen management strategy (meaning change for better or continuous improvement involving everyone in the organization) restored the quality and quantity of the products. It is generally assumed that implementing the kaizen management technique in Ethiopian firms would create competitive products (i.e., products with lowest price, highest quality and with the best services) for their domestic and international customers. Through a continuing teamwork approach with interactive communications, kaizen would improve their organizational capacity, empower employees, improve the quality of workers, and add value to the products.

In Ethiopia Kaizen has been implemented in two phases; the first phase was from October 2009-June 2011 as a pilot to confirm transferability, adaptability and a way of thinking of companies and resulted in the formation of the Ethiopian Kaizen Institute (EKI) in October 2011. Phase II was launched in November 2011, with the aim of establishing system to disseminate quality and productivity to the private enterprises in a sustainable manner.

In Ethiopia, some organizations launched implementation of kaizen in both governmental and public institution to develop and improve the manufacturing working ethics by having considerable improvement on performance. In this a few sample organizations were selected in order to see their effectiveness and later expand the experience to other organizations. It is true that little has been done to find out the result of implementation of kaizen in the organizations.

As governmental organization, Metal and Engineering Corporation (METEC) has implemented kaizen with the help of Indian Kaizen Institution; Hibret Manufacturing and Machine Building Industry (HMMBI) is one of the METEC industries, which has implemented kaizen in some phase. Where kaizen was implemented in phase one around 30 participants took the training and were certified by Indian Kaizen Institution, and they train others employees training like kaizen Foundation (Introduction to Kaizen, principle of kaizen, rule of kaizen, 5s campaign, wastes, total productivity maintenance, total flow management, value stream mapping, visual management and shifting paradigm) and done practical exercise like 3m (Muda, Mura, Muri) and also implement the 5S`s (Sort, Straighten, Shine, Sustain, and Standardize), calculating through put time to improve the production system, and make visual management system in the working areas.

As discussed above, in HMMBI, kaizen implementation has become a seasonal work due to different problems this in turn impact productivity and efficiency of the industry. Therefore, Kaizen implementation must be taken as a strategic decision to work, constantly improve the performance of employee's attitude and management commitment, the interaction between staff and management, and the pursuit of better quality and productivity.

1.2 Problem statement

Now a day in Ethiopia there is kaizen institute working for governmental and public associations to develop and improve the manufacturing work ethics, but a number of manufacturing industries in Ethiopia currently are not using methods that help them achieve high productivity and excellent quality standards to make them more competitive in the global markets. Many manufacturing companies are affected by such problems due to high quality rejects, high inventories, long lead time of production, high costs of production, and incapability to cope up with customer orders. This is because; most of the activities taken for quality and productivity improvement are through top-down approaches without the best management skills.

In the case of HMMBI kaizen has been implemented since 2013 with the help of the Indian Kaizen Institution by selecting 30 employees to participate in the implementation process, which the institute trained and certified. HMMBI has five main factories under it, Machine Building Factory, Precision Machinery Factory, Materials Treatment, Conventional Manufacturing Factory, and Mechanical Sub-assembly Factory. After the training, 3 pilot factories are selected based on the factory's working status. Those are Precision Machinery Factory, Conventional Manufacturing Factory, and Mechanical Sub-assembly (Machine Building Factory) to implement kaizen such as 5S's, calculating and improving through put time, developing value stream mapping and visual management.

However, implementation process was found to be good at the beginning but later, the concepts of kaizen implementation process could not be sustained. Since kaizen is strongly focused on continuous improvement; the implementation process did not effectively take place in this specific industry. Many reasons were raised for the failure of kaizen implementation process, the

main reasons being poor communication among working departments, management's failure of full commitment, lack of organizational encouragement, and limited awareness about kaizen.

Due to this reason the industry faced different problems; such as lack of communication, high inventories, high quality rejects, weak training system, material and tools are not placed in right place, long lead time of production and incapability to cope up with customer orders.

The ultimate goal of any manufacturing company is to eliminate waste and produce a zero defective items and increasing productivity in order to satisfy its customers while winning the competition in the market. However, it needs a continual assessment with continuous improvements. So in order to solve those problems like lack of management commitments, training system, communication and organizational encouragement this study focuses on assessing kaizen implementation and challenges towards sustainability at HMMBI.

1.3 Objective of the study

1.3.1 General objective

The general objective of the study is to assess sustainability of kaizen implementation towards sustainability of efficiency at HMMBI.

1.3.2 Specific objective

Specific objectives of the studies are: -

- Analyze the kaizen implementation at HMMBI.
- Identify the factor affecting kaizen implementation.
- Understand employee attitude towards kaizen implementation.
- Identify and analyze challenges and opportunities for kaizen implementation.
- Propose a frame work and recommend for proper implementation of kaizen for sustainability.

1.4 Research questions

The study is aims to answers and assesses the following research questions

1. What are the factors that affect sustainability of kaizen implementation?
2. What are the major challenges to sustain kaizen implementation?
3. How to understand employee attitude toward kaizen implementation
4. What method can sustain the kaizen implementation process and what other improvement tools?
5. How to sustain kaizen implementation?

1.5 Significance of the study

The result of this research can be applied by the industry under study to realize its achievements, will be the ways of keeping improvement cycles to go forward on a continuous basis they ensure that implementation is improve and sustain. Also organization came across the impact of implementation is change to sustainability and other organizations and individuals can apply the outcome of this research to become accustomed the process by management and employee attitude with their commitment.

1.6 Scope of the study

The scope of the study is focused on Hibret Manufacturing and Machine Building Industry to assess failure of kaizen implementation, kaizen implementation process toward sustainability and sustainability challenges toward kaizen implementation. In this research, assessment of kaizen implementation toward sustainability can be analyzed by cause and effect diagram and SWOT (Strength, Weakness, Opportunity and Treaties).

1.7 Limitation

Though maximum effort has been made to successfully undertake the research, some factors and conditions held it and not completed scheduled time of the research such as; shortage of time to implement the proposed implementation process, lack of properly documented information and access to the information and constraint getting key officials were some of the limitations in the study.

1.8 Methodology

To gather the required information the researcher used both primary and secondary data.

Primary data

Questionnaires: A questionnaire consists of a number of questions which contain characteristics of the respondent, challenges and sustainability of kaizen implementation and suggestions system and also it were prepared by two languages (Amharic and English).

In depth interview: the interview focused for managers and supervisors of the factories because they understand basic concept of sustainability through kaizen implementation.

Secondary data:

The secondary data collected published and unpublished documents. Usually published data are available in the form of various publications web sites, libraries and organization documents, etc. And also this research used different published and unpublished documents from different website, articles and reviewed the paper works which is related to kaizen concepts.

Data analysis

The data collected using both methods was organized. The questionnaires prepared in the scale format that asks for agree/ dis-agree rating response of employees. After collecting the data it were analyzed by using descriptive statistical analysis methods; the factor, challenge and opportunities were analyzed by cause and effect analysis and SWOT analysis.

1.9 Organization of the document

The research is organized in to seven chapters. Chapter one which is the introduction of the study includes background of the study, problem statement, research questions, objective of the study, significance of the study, scope of the study and organization of the thesis. Chapter two presents review of related literature in kaizen and different concepts regarding to kaizen. The third chapter describes background of the case company, chapter four describe research design and methodology, the sampling, data collection instrument and method of data analysis. The fifth chapter presents data analysis, discussion and finding. The six chapter is about the proposed kaizen implementation process. And chapter seven includes conclusion from those finding and recommendation including suggestions.

CHAPTER TWO

2. RELATED LITERATURE REVIEW

2.1 Historical Overview of Kaizen

In the year of 1980 management techniques focusing on employee involvement and empowerment through team work approach and cooperative communication and on improving job design were not new but in Japanese companies it is seemed to implement different techniques and methods more effectively than others. The business experience in the 1980s was those Japanese companies their mission for global competitiveness established a greater commitment to the philosophy of continuous improvement than western companies did. For such type of philosophy the Japanese used the term kaizen [4].

Darius (2011) further explained the concept of kaizen as a compound word involving two concepts: Kai (change) and Zen (Good, go to better), loosely translated as “change to the better “or continuous improvement’. Kaizen is a way of thinking and it extend also in to personal life as a “life philosophy” tomorrow must be better than today.

The principle of a Kaizen workshop is to make people's jobs easier by taking them apart, studying them, and making improvements. The message is extended to everyone in the organization, and thus everyone is a contributor. So when Kaizen for every individual could be an attitude for continuous improvement, for the company also is a corporate attitude for continuous improvement.

2.2 Concept and Definition of Kaizen

Kaizen is a combination of two words from one Japanese concept that its definition refers to a change toward betters or continuous and gradual improvement. In fact, Kaizen stands on this philosophy that is not necessary to look for explosive or sudden changes for improvement of the organizations, but any improvement or reform will bring productivity enhancement if they are continuous and constant [1].

Continuous and gradual improvement using employee’s participation

KAI + ZEN = KAIZEN

Kai + **Zen**
Always good

Continual improvement

Change for the better

Therefore kaizen is always good, continual improvement and change for the better. Kaizen refers to the conducted partial expressions in the existing circumstance through endless attempts.

Kaizen is essential principle of quality management generally and specifically within the approaches of total quality management and lean manufacturing, Originally developed and applied by Japanese industry and manufacturing in the 1950s and 60s, Kaizen continues to be a successful philosophical and practical aspect of some of the best known Japanese corporations and has for many years since been interpreted and adopted by 'western' organizations all over the world. Kaizen is a way of thinking, working and performing, fixing in the attitude and value of organization [2]. Kaizen should be accepted at all level of organizational management.

In order to understand kaizen strategy the basic concepts and systems are listed below

- Kaizen and management
- Process versus result
- Following the plan-do-check- act and standardize-do-check-act cycles
- Putting quality first
- Speak with data
- The next process is customer

Key concepts of Kaizen:

- Every key word in Kaizen: improving everything that everyone does in every aspect of the organization in every department, every minute of every day.
- Evolution rather than revolution: continually making small, 1% improvements to 100 things is more effective, less troublemaking and more sustainable than improving one thing by 100% when the need becomes unavoidable.
- Everyone involved in a process or activity, however actually insignificant, has valuable knowledge and participates in a working team or Kaizen group

- Everyone is expected to participate, analyzing, providing feedback and suggesting improvements to their area of work.
- Every employee is empowered to participate fully in the improvement process taking responsibility, checking and coordinating their own activities. Management practice allows and facilitates this.
- Every employee is involved in the running of the company and is trained and informed about the company. This encourages commitment and interest leading to fulfilment and job satisfaction.

Kaizen is an umbrella concept covering all of those Japanese practice like customer orientation, TQC total quality control, QC circle, suggestion system, automation, discipline in the work place, TPM total productive maintenance, Kanban, SMED, JIT, quality function deployment, supply chain management, visual management, zero defect and etc.

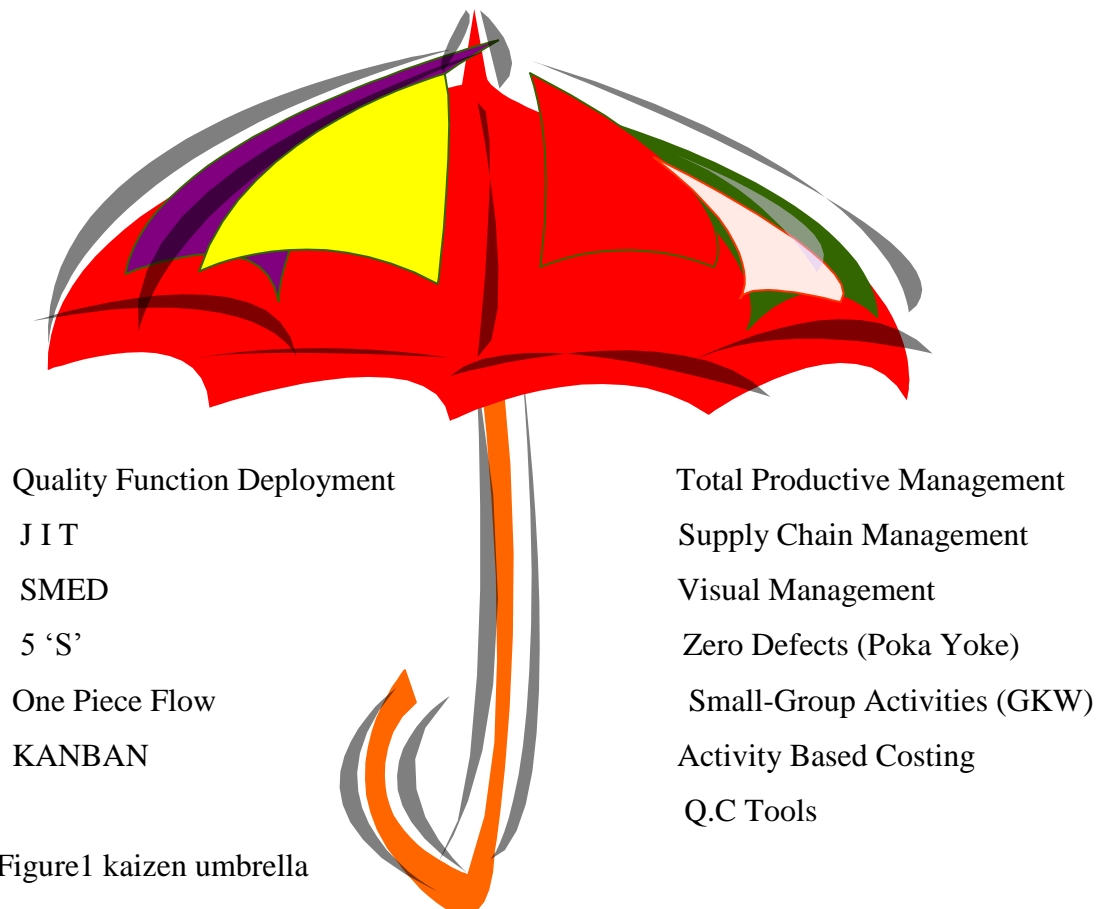


Figure1 kaizen umbrella

The kaizen method and technique are needed with respect to some instrument it can be used to increase productivity obtaining from competitive advantage and also raise the overall business performance through the organization. [3]

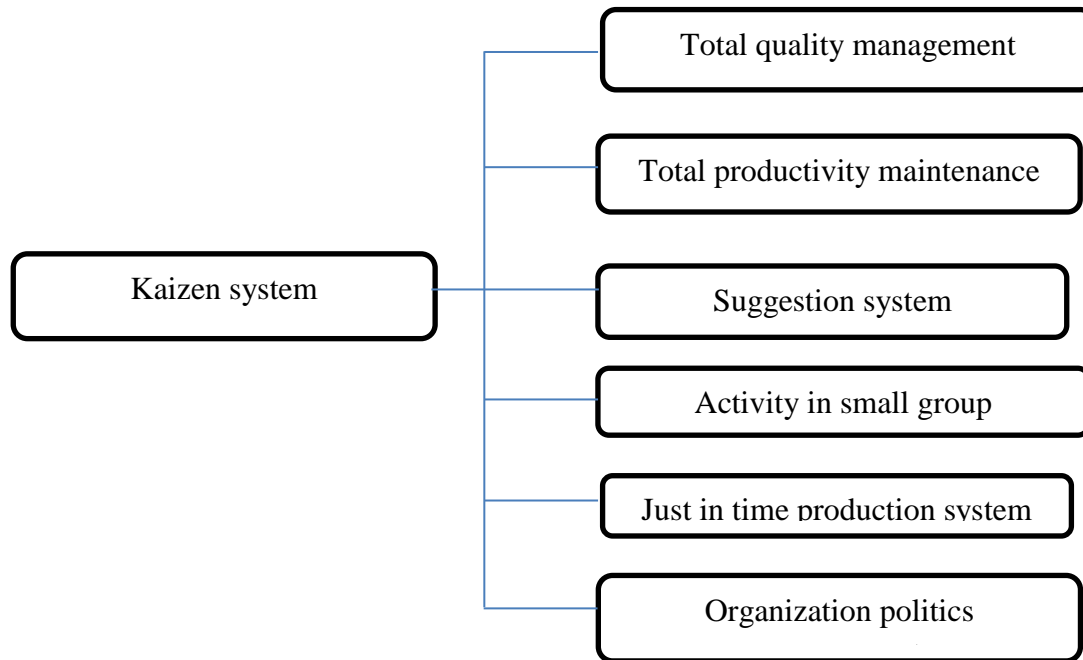


Figure 2 kaizen system

2.2.1 Objective of kaizen

Kaizen aims for improvements in productivity, effectiveness, safety, and waste reduction, and those who follow the approach often find a whole lot more in profit.

- Less waste
- People are more satisfied
- Improved commitment
- Improved retention
- Improved competitiveness
- Improved consumer satisfaction
- Improved problem solving
- Improved teams work

The aims of a Kaizen organization are typically

- To be profitable, stable, sustainable and innovative.
- To eliminate waste of (time, money, materials, resources and effort) and increase productivity.
- To make incremental improvements to systems, processes and activities before problems arise rather than correcting them after the event.
- To create a harmonious and dynamic organization where every employee participates and is valued.

2.2.2 Application of kaizen implementation

Kaizen is a solid planned instrument which is used to achieve the outcome of the company's objective. The 5S techniques are fundamental techniques which allow the increase of efficiency and productivity while ensuring a pleasant organizational climate [9]. Kaizen is journey it is not end in a time to eliminate waste, improve productivity, improve quality and efficient utilization of resource. If it done correctly kaizen also helps to improve work place, eliminate hard work and teach people how to perform best of their capability and reduce waste of manufacturing process.

Kaizen is not a once a day, a once a month or a once a year activity. Its implementation requires an ongoing effort to improve all aspects of organization in the light of their efficiency, effectiveness and flexibility. Improvements are based on many, small changes rather than the radical changes that might arise from Research and Development (Imai, 1986). W. Edwards Deming, a pioneer of the field, popularized a tool called the plan-do-check-act (PDCA) cycle, also known as Deming Cycle for continuous improvement [10].

Plan: involves analyzing the current situation, identifying an opportunity and planning for change.

Do: Implement the change on a small scale.

Check: Use data to analyses the results of the change and determine whether it made a difference.

Act: If the change was successful, implement it on a wider scale and continuously assess your results. If the change did not work, begin the cycle again.

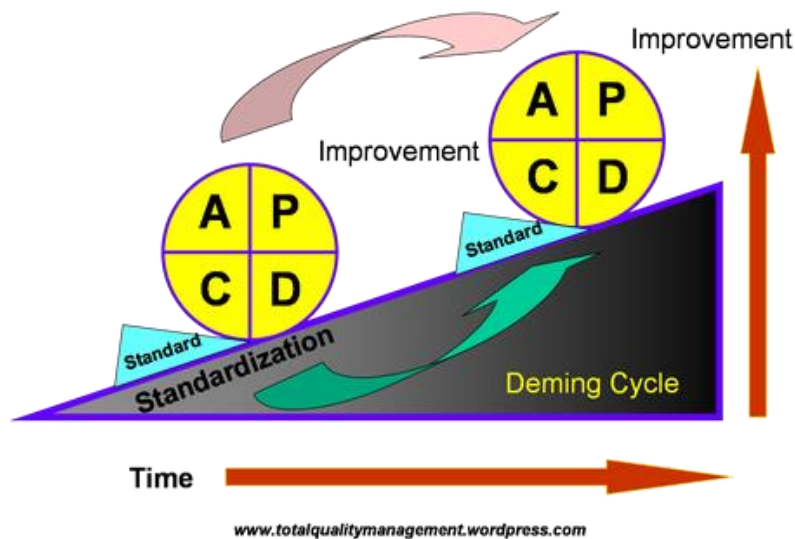


Figure 3 Deming cycle for continuous improvement

2.2.3 Characteristics of kaizen implementation

One of the most important aspects of Japanese quality kaizen is well known on its characteristics. The main characteristic of kaizen is finding the root cause of error made and correcting or modifying them. Kaizen experts are prepared event to find their own errors. Each error is seen as chance in the improvement root path. Kaizen is more focused on process then result focused and it also improves the system rather than human resource improvement [8].

In kaizen environment and culture when an employee make error in his/ her job it is not seen as an event to blame, but it seen like a chance to find out what went wrong with the process. Kaizen practitioners spend a lot of time to measure customer satisfaction and error rates. They also make meeting and opportunities to discuss a possibility for improvement. Thus, kaizen focused on incremental improvement rather than exact solution to problems. Small improvement in kaizen makes it easier to implement, also if the change made in business the process are small.

Since most of the improvement techniques come from employees they find the easier process to adjust and the resistance to change is less. In fact people tend to enjoy such a change the way in

which kaizen principle help to have competition. Kaizen philosophy in work it helps to pressure employee participation in decision making process.

2.2.4 Principle of kaizen

Kaizen principles are a widespread way of approaching for continuous improvement of a company's process each and every principle has a significant role in improvement and productivity. It also refers to people's way of thinking (also called mindset) and it start on the point for kaizen (changing for the better) and are embedded in all the tools. Kaizen uses 5 main principles [5]: According to McAdam et al., 2000, Kaizen creates a culture that allows employee creativity and ideas to show, the result is the firms will be able to react quickly to change and to be better or differently across major company functions. Cheser (1998) claims that kaizen has resulted in dramatic gains in productivity, improved jobs and increased motivation. However, the employees must receive adequate training and support to ensure the successful of the kaizen activities (Marks berry et al., 2010).

Processes must involve by gradual improvement rather than radical changes

In practice, Kaizen can be implemented by improving every aspect of a process in a step by step approach, while gradually developing employee skills through training education and increased involvement resulting in quality improvement. With quality improvement, employees meet together to discuss the current operations of the company. They decide what things can be changed that will improve the quality of the company and of the products [1].

Human resources are the most important

Kaizen must be practiced in cycle with "Respect for People" not resulting in outcomes such as layoffs. Kaizen has become successful with many manufacturing companies because the employees are involved and they perform in team woke. They feel that their opinion is important and this increases the employee morale. Keeping the employees happy will cause them to be more productive and satisfied with their jobs [1] [6].

Teamwork

One of the biggest principles of the kaizen approach is the ability to work in teams. Each department is considered a team and they will be responsible for making small changes that impact the organization [3]. All employees from top manager to front line workers should share common values, change objectives, and information. And, should fulfill their respective role properly, enhancing their capabilities through exercising self-government and creativity. The teams will then report to their manager. The manager takes this information to management and the entire process of kaizen is evaluated.

Discipline

In order for kaizen to be effective, discipline is necessary. Management as well as workers needs to believe in the Kaizen idea and strive toward obtaining the small goals in order to reach overall success. A strong commitment to discipline and to the kaizen method will prove success for a company [6].

Continuous improvement

Improvement must be based on statistical or quantitative evaluation of process performance. The small improvements will lead to bigger improvements throughout the entire company. This is why kaizen is called a "continuous process improvement" system or a "continual improvement method." Even with the changes, there are still small things employees can do to change the way they work. There are simple things you can do to help your employees work faster and become more efficient [1]. All employees should have firm belief that the work place must nurture a desire for continuous improvement Kaizen demands product or service quality is improved and is monitored on a continuous basis [8].

2.2.5 Concept of 5`s

It is systematic approach to workplace organization and cleaning that will transform a disorganized workplace into an efficient running machine. It focused to improve the conditions in the working area (Benes Rines Tina, undated).

GRIPS (2009) defined the 5S's is a system of steps and procedures that can be applied to individuals and teams to arrange work areas in the best way and a condition to improve performance, comfort, safety and cleanliness.

Genobz (2010) defined the "5S's" as a structured program to achieve total organization, cleanliness, and standardization in the work place.

Imai (1997) further explained that any organization whether manufacturing or service industry should start Kaizen activities through implementing the basic three pillars which include the five steps of housekeeping (5S's), standardization and Muda elimination.

Seiri (Sort/ Sort Out)

Distinguished between necessary and unnecessary items in gemba and discard the latter. It requires classifying items in gemba in two categories, necessary and unnecessary and discard or removing the latter from gemba or workplace.

Seiton (Straighten/ Configure)

Arrange all items remaining after Seiri in an orderly manner. Once Seiri has been carried out, all unnecessary items have been removed from the workplace, leaving only the minimum number needed.

Seiton here means, classifying items by use and arranging them according to minimize search time and effort. Each item must have a designated address, name, volume, location and number of items must be specified.

Seiso (Scrub/ Clean and Check /Shine the Workplace)

Seiso means cleaning the working environment, including machines, tools, floors, walls and other areas of the work place. There is also an axiom ‘Seiso is checking, monitor and restore the condition of working areas during cleaning.’ A person cleaning a machine can find many problems.

Seiketsu (Systematize /Conform)

Extend the concept of cleanliness to oneself and continuously practice the above three steps. Keeping one’s person clean , by such means as wearing proper clothes , safety glasses , gloves, shoes, and as well as maintaining a clean , healthy working environment.

Shitsuke (Standardize/Custom and Practice/ Self Discipline)

Build self-discipline and make a habit of engaging in 5S’s by establishing standards. Employee must follow established and agreed upon rules in their daily work. Imai further explained the importance of logical implementation of the 5S’s addresses people resistance to change and prepare employee mentality for change. He listed the following benefit of 5S’s in the work place.

- Help employees acquire self-discipline
- Highlighting the many kind of muda in gemba,
- Recognizing problems in the first step in eliminating muda
- Pinpointing abnormalities,
- Reduce waste full motion
- Allowing problems to visually identified and hence to solved
- Making quality problem visible
- Improving work efficiency and reducing cost of operation.

According to Imai, the five steps of housekeeping with their Japanese names are



Figure 4 5`s campaign

2.2.6 Concept of waste

The other name of waste is Muda, in Japanese Muda mean waste. Any non-value adding activity done by people and machine are included or known as Muda. According to Imai 1997 Muda is any non-value added task and elimination of Muda can be the most cost effective way of improving productivity and reducing operating cost [7]. Muda or waste can be classified in to eight and some time it called or known by DOWNTIME.

1. D- defect/ reject
2. O- overproduction
3. W- waiting
4. N- non-utilized resource
5. T- transportation
6. I- inventory
7. M- motion

8. E- excess processing

Table 1 Summary of Muda or Waste

Muda types	Definition
Overproduction	Producing items earlier on in greater quantities than needed by the customer
Inventory	Excess raw material, WIP, or finished goods causing longer lead times, obsolescence, damaged goods, transportation and storage costs, and delay
Repair/rejects	Production of defective parts or correction
Motion/movement	Any movements employees have to perform during the course of their work other than those adding value to the part
Processing/over processing	Taking unneeded steps to process those parts
Waiting	Workers merely serving as watch persons for an automated machine, or having to stand around waiting for the next processing step
Transport/conveyance	Moving work in process (WIP) from place to place in a process, even if it is only a short distance

Concept of PDCA/SDCA cycle, SWOT and cause and effect analysis

PDCA cycle

The management plans, each employee follow the planned activities, the supervisors check, and the management correct or secure every step, systematically. It is important to be seen that each one employee follows his own PDCA cycle. A successful PDCA cycle then is followed by the SDCA cycle where 'S' stands for standardization and maintenance of the new situation and PDCA stands for improvement (Thessaloniki, 2006).

Improvement within the organization is shown between the standardized-do-check-act cycle and plan- do-check-act cycle. SDCA standardize and stabilizes the current process, while PDCA improves them .Thus, SDCA refers maintenance and PDCA refers Kaizen.

According to Imai (1997) further listed the key features of standardization as:

- Represent the best, easiest, and safest way to do the job,
- Offer the best way to preserve know-how and expertise,
- Provide a way to measure performance,
- Show the relationship between cause and effect,
- Provide a basis for both maintenance and improvement,
- Provide objectives and indicate training goals,
- Provide a basis for training,
- Create a basis for auditing or diagnosis, and
- Provide a means for preventing recurrence of errors and minimizing variability.

SWOT analysis

A SWOT analysis should be used to help an individual whether it is an organization or an individual to gain insight into its current and future position in the marketplace or against a stated goal [17].

Strengths: The strengths segment of a SWOT analysis provides an area to list everything done right either individually or as an organization. This section contains both strengths within the

organization and external strengths, such as customer relationships. Organizations should seek to reflect their strengths honestly to maintain the integrity of the SWOT analysis. Feedback from others can also provide clarification on strengths captured in this segment of the SWOT analysis.

Weaknesses: The weaknesses segment contains needed improvements within an organization or personally. Group sessions can help organizations identify weak areas. Analysis in this segment can provide a clear list of areas that need a development plan to remedy the issues identified. Tools such as action plans and goal formation provide ways to improve weaknesses. From a competitive standpoint, organizations should attempt to mitigate weaknesses as soon as possible since they can offer an undesired opportunity to their competitors.

Opportunities: Opportunities for improvement exist within all organizations. This makes the opportunities segment of the SWOT analysis important. Within this segment, organizations identify internal and external opportunities. To have a comprehensive list, organizations sometimes use group facilitation to identify these opportunities. Organizations can add both current and future opportunities to this segment of the quadrant.

Threats: By examining threats, such as new competitors in the market, organizations can implement counter measures prior to the threat occurring. To ensure success, organizations may need to deal with both future and present threats. For individuals creating a SWOT analysis for personal development purposes, an example of a threat such as job security problems, would reside in this section of the SWOT analysis.

Cause and effect analysis

A cause and effect diagram examines why something happened or might happen by organizing potential causes into smaller categories. It can also be useful for showing relationships between contributing factors. One of the Seven Basic Tools of Quality, it is often referred to as a fishbone diagram or Ishikawa diagram.

One of the reasons cause & effect diagrams are also called fishbone diagrams is because the completed diagram ends up looking like a fish's skeleton with the fish head to the right of the diagram and the bones branching off behind it to the left.

These are the best and most common practices when creating cause and effect diagrams.

- Identify the problem: Define the process or issue to be examined.
- Brainstorm: Discuss all possible causes and group them into categories.
- Draw the backbone: Once the topic is identified, draw a straight, horizontal line (this is called the spine or backbone) on the page, and on the right side, draw a rectangle at the end. Write a brief description of the problem in the rectangle.
- Add causes and effects: Causes are added with lines branching off from the main backbone at an angle. Write the description of the cause at the end of the branch. These are usually one of the main categories discussed above. Details related to the cause or effect may be added as sub-categories branching off further from the main branch. Continue to add branches and a cause or effect until all factors have been documented. The end result should resemble a fish skeleton.
- Analyze: Once the diagram has been completed, analyze the information as it has been organized in order to come to a solution and create action items.

2.3 Kaizen and other Improvement Tools

2.3.1 Total quality management

According to Johnson 1998 defined total quality management is ongoing process from top management takes whatever step is necessary to allow everyone in the organization performing all duties to establish and achieve standards to meet or exceed the need and expectation of their both internal and external costumers [9].

Deming prize, describe TQM as: “A set of systematic activities carried out by the entire organization to be effectively and efficiently achieve company objectives so as to provide products and services with a level of quality that satisfies customers, at the appropriate time and price.” American Federal office of Management Budget Circular define TQM as; “TQM is a total organizational approach for meeting customer needs and expectations that involves all managers and employees in using quantitative methods to improve continuously the organization’s processes, products and services”. In any organization total quality management

goal is to increase and satisfying need of both internal and external customers through continuous improvement [12].

Oakland (2007), described TQM as an effort to improve the whole organization's competitiveness, effectiveness and structure. This is achieved through involvement of all the persons in all quality improvement activities of the organization. Continuous process improvement is a natural evaluation of TQM. [9]

- a. TQM involve all employee at all level of an organization
- b. TQM is a continuous improvement philosophy in continuous process improvement is natural assessment of TQM.
- c. To successful implementation of TQM principle top management commitment and supporting staffs are essential element.
- d. TQM is customer focused management and system approach through a process management. Process should be improved to improve the result of organization.
- e. For successful implementation of TQM in manufacturing it is necessary to change culture.

Relationship and difference between TQM and kaizen

Relationship between TQM and kaizen

Both TQM and kaizen are interdependent, thus kaizen is continuous improvement and it has been introduced as an important element of TQM. Some researcher considered kaizen mean continuous process improvement is natural assessment of TQM and continuous improvement aspect. Both can be focused on small and gradual improvement but to get large effects TQM involve radical improvement and critical process are important [5].

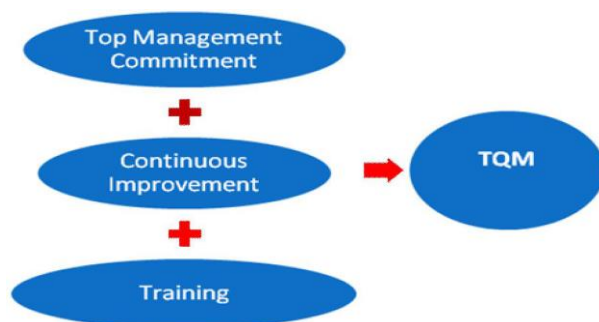


Figure 5 kaizen as subset of TQM

Difference between TQM and kaizen

Kaizen is a philosophy as well as a methodology that can be to encourage or inspire improvement for the existing process or work environment. TQM is a philosophy what makes the organization to quality and also TQM is focused on the process that the production is throughout the product (continuous process improvement) [5].

Table 2 Difference of TQM and kaizen

Items	KAIZEN	TQM
Focal point	Process oriented and result focused concept	Product oriented and customer focused concept
Scope	The scope is limited for the selected project	Spread throughout the organization
Implementation method	Implemented in the form of small incremental project in the selected area	Made in all the process in all department of the organization
Approach	Concept follow bottom-up approach	Follow both top-down and bottom-up approach
Importance of resource	Focused on the improvement within the available resource	Investment needed to improve the quality product or process
Involvement of people	All stakeholder at all level of the organization when asking suggestion for improvement of the organization are involved	Whole organization including all employee at all level are responsible and involved for the improvement of quality products at all the time
Implementation mechanism	Focused on step by step improvement. Focus on small scale improvement, done in every day, everywhere and every person after every step discontinuity happen for sustaining the improvement	Focuses on immediate operation in all process and improvement and sustainability goes in parallel to each other. No cutout in the process of continuous improvement the whole organizational personals always work on the improvement process

Improvement of quality	Focuses on improving quality through small incremental changes in process and work place	Focused on improving quality by value adding to make the product perfect, improving productivity and decrease difference of measurement with in the process
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2.3.2 Business Processes Reengineering

” Fundamental and radical approach to reengineer the processes with a ‘top down’ approach”

Business process reengineering is a business management strategy, focusing on the analysis and design of work flows and business processes within an organization. BPR is aimed to help organizations fundamentally rethink how they do their work in order to dramatically improve customer service, cut operational costs, and become world-class competitors [13].

BPR seeks to help companies radically restructure their organizations by focusing on the ground-up design of their business processes. Re-engineering emphasized a holistic focus on business objectives and how processes related to them, encouraging full-scale recreation of processes rather than iterative optimization of sub processes. Business process re-engineering is also known as business process redesign, business transformation, or business process change management [14].

BPR is different from other approaches to organization development (OD), especially the continuous improvement or TQM movement, by virtue of its aim for fundamental and radical change rather than iterative improvement [13].

Table 3 Kaizen versus BPR

Comparison variables	Kaizen	BPR
International applicability/compatibility	Kaizen is applicable across different cultural settings. This is so because the most important defining factors for Kaizen are workers’ skills, motivation, and top	BPR is about technology or innovation, hence has almost nothing to do with cultural differences. BPR helps to become more productive as the

	management commitment rather than cultural elements. Kaizen helps enterprise become several times as competitive as they are now.	level of automation increases with BPR
Level of development	Suitable for developing countries whose enterprises perform along traditional lines and works well for slow-growth economies in particular.	Better suited to fast changing economies and economies that can invest in new technologies and innovations.
Pace of change	Slow, continuous and incremental	Abrupt, once-and-for-all, large step
Stability	Changes are Highly stable and predictable	Changes are spontaneous and less predictable
Investment orientation	Kaizen directly works on workers and managers and makes them several times as competent as they are now	BPR focuses on technology and automation. By automating, BPR increases

Gap of kaizen and other tools

Kaizen is a changing tool which is implemented only on the selected project or the selected area it does not spread throughout the organization and it does not need other resource; the implementation process is done by the available resource.

2.4 Kaizen Implementation practice

The theme Kaizen is integral part of a total quality approach is the Japanese concept of Kaizen, which literally means ‘improvement’ or is often interpreted as gradual progress or incremental change. Kaizen was introduced in several Japanese organizations after the Second World War and is particularly associated with Toyota. The approach analyses every part of a process down to the smallest detail; Sees how every part of the process can be improved; Looks at how employees’ actions, equipment and materials can be improved; and Looks at ways of saving time and reducing waste it includes social life outside the working environment according to (Mullins, 2010).

Kaizen implementation is not once in a month or once in a year activity. It is continuous. Imai (1997) expressed that the rate of the worker participation in terms of providing important suggestion for their organization and Japanese companies, (such as Toyota and Canon, a total of 60 to 70 suggestions per employee per year are written down, shared and implemented). In most cases these are not ideas for major changes. Kaizen is however, based on making little changes on a regular basis namely, always improving productivity, safety and effectiveness while reducing waste.

Kaizen in Global

From the fragments of the Second World War, Japan through its culturally embedded, innovative management system has succeeded in rebuilding its economy and is now emulated by the community of nations (Waheed et al.,). Its key objective has been to embed the process into the work culture to achieve a never ending drive toward increasing productivity efficiency, and quality improvement. Today, the kaizen management system is spreading throughout the world. It has become a goal for many manufacturing companies to build a culture of continuous commitment to improvement.

Many non-Japanese companies are introducing a kaizen management strategy without adequately taking into consideration its own cultural roots. Thus, they face many barriers while they are chasing this dream. As stated by Brunet and New, it has not been clear before how firms in other cultures can maintain the momentum for kaizen activities, or how the concepts of target

setting, control and incentives for participants fit into their overall management system. The Toyota Total Production System (TPS) sees problems as opportunities to improve, seeking root causes by asking what, why, and who questions. Companies from other cultures visualize problems as discrepancies between the current situation and the standardized ideal that can only be solved by management. In addition, while the Toyota TPS, sees that qualities are customer driven, other cultures view that whatever they supply to the market can be sold, thinking they have produced to the needs of consumers Ahmed,S; Hasan,M; Fen,Y, [3].

Despite these glaring and challenging problems, in order to stay competitive in an increasingly global market place and with an increase in customer demands, a number of foreign companies are forced to rethink their manufacturing and management approach to lower costs of production, minimize waste, improve productivity, boost quality, and achieve sustainability. Thus, if top management of kaizen companies in other cultures has the desire to increase for a healthy long term, before starting on a kaizen transition, management needs to be passionately committed to undertaking an assessment of its own internal and external conditions. Also, it needs to see if it has tailored its activities to meet domestic and global customers. In addition, when transferred to other cultures, companies need to use dedicated cross functional teams to improve a targeted manufacturing work area (Melnyk et al., Kirby and Greene, and Heizer & Render,).

Therefore, since well-established kaizen strategies help companies to control cost, minimize workers motion, focus on zero defects and, more fundamentally, improve workers' skills by creating a cooperative atmosphere where everyone becomes fully aware of the key goals, each step of the kaizen process needs to be mapped out and measured to ensure economic value to its customer. As stated by Glover et al since kaizen teams apply structured process tools and human creativity with a goal of substantially improving the performance of the work area, process or product, the team workshop needs to be purposely designed to make jobs easier by taking them apart, studying them, and making improvements, creating a culture of continual improvement with well-designed outreach programs to everyone in the organization (Thessaloniki).

Kaizen in Africa

Kaizen has become a global activity spread by multinational companies and their employees. It has become popular not only in the manufacturing sector but also in the service sector. However, proliferation of kaizen in Africa is still very small due to the limited number of players and the philosophy the Government who bring in the practice. Due to this situation the responsible Government body received the best practice of the Japans KAIZEN in their premises.

For the effectiveness of the KAIZEN they commence it as institute. Kaizen Institute is an international private consultant group that specializes in the kaizen method. It has licensed networks throughout 24 countries from which consultants provide services globally. In Africa, its subsidiary institute opened in several African countries including Ethiopia. Their performance has proved that the kaizen method is much needed and commercially viable. There are also other unlicensed consultancies firms, which can provide training on kaizen. When we observe in the Japanese context all of KAIZEN consultants are private company. Yet, these private services are still the domain of medium and large-scale companies, and their services are not affordable for most micro and small enterprises in Africa according to (Ibid.) Kaizen activities are often found project titles such as “productivity improvement. “In Africa, are on-going be efficacies from the kaizen projects assisted by JICA (Ohno, I., Ohno, K., Uesu, S., Ishiwata, A., Hosono, A., Kikuchi, T., et al)

Kaizen in Ethiopia

The Introduction of kaizen as a management tool in our country has been started with the assistance of Japan international corporation agency (JICA) in response to the request of the Government of Ethiopia to the Government of Japan for kaizen technology transfer to our country. After the project design phase was completed, the former Ministry of Trade and Industry established kaizen unit with professionals drawn from the ministry and relevant sectoral institutes, and Japan international corporation agency (JICA) deployed a consultant team to work with the Unit. The kaizen project was officially launched with the first National kaizen Seminar in the presence of high level officials from both sides. With the project experiences of sixteen months so far producing encouraging results at pilot companies, kaizen is now selected as one of

management tools to improve and enhance managerial capability to implement Growth and Transformation Plan.

Ethiopian kaizen institute defines kaizen has a system of continual undertaking by an organization to improve its business activities and processes with the goal to always improve quality of products and services so that the organization can meet full customer satisfaction.

Kaizen's guiding principles:

- 1) Integrated total company approach: Genuine participation of top management, middle managers and front-line employees in a collaborative working system throughout company organizations.
- 2) Proactive and spontaneous participation of employees of front-line workplaces with their own initiatives.
- 3) Focus on the workplace that encourages improvements of efficiency in existing resources allowing low cost improvements to accumulate for significant contribution to the company goals.
- 4) Continuous and endless activities in revolving cycles of PDCA resulting in significant improvements.
- 5) Endogenous undertaking conducive to change in organizational culture: Practicing kaizen in itself leading to a corporate culture of continually self-innovative organization and self-motivated workforce.

Since kaizen is a management philosophy that emphasizes problem-awareness and provides clues to identifying problems, before launching the kaizen strategy for improvement, firms need to take the time to review their performance and determine their strengths and weaknesses. In short, each firm in Ethiopia needs to determine the following: 1) is there a synergic relation between the Japanese kaizen quality initiatives and the business environment of the firms in order to embark on quality journey with Japan's experience as the guideline? 2) Has the transferred kaizen management system been modified and appropriately designed to suit the diversity of practical circumstances and conditions of the Ethiopian firm, or is it adaptable to fit the firm's working culture? 3) Are the workers in the firm disciplined and motivated enough to share the underlying kaizen philosophy which goes beyond formal job requirements to

effectively participate in process improvement i.e., to: a) identify opportunities, b) improve things, c) challenge the status quo, d) create favorable conditions, and become self-starting and proactive? 4) Are the firm employees ready to utilize the kaizen process tools and methods to make the problems of their firms visible, and then use formal root analysis to identify and correct the problems at the source?, and finally, 5) Is the enterprise prepared to think of ways of continuously improving its products and services to meet customer's demand?

Table 4 Implementation of kaizen and challenges

Target/ objective	Methodology	Challenges	Approaches	Finding/ result	Author
In Ethiopia					
Struggled to assess the practices and challenges of kaizen implementation at Entoto Polytechnic Cluster College in Woreda three of Gulele Sub-City in Addis Ababa City	Review some assessment document and collecting quantitative data from the college	Entoto TVET College Gap is in knowledge of trainers and employees; negative attitude of trainers and employees towards the kaizen strategy; skills of trainers and employees; gaps in infrastructure and materials resources; and limited capacity and capabilities of the management body	Before implementation, kaizen implementers and top management should get training which ties them together on knowledge of kaizen leadership quality, skills hand on and attitudes to go together with this dynamic world	The Kaizen implementation given for those enterprises proved productivity and created conducive working environment and transformed them for a betterment of their incomes. Those enterprises are well-aware of the five assets that are implemented which include identification of inputs for production and service (Sort); labelling of	Berhanu Tadesse

Administration.				materials (Stabilize); cleaning machineries (Shining); maintaining the already organized shops (Standardize); and space management and keeping modern production flow, skills gap (need assessment and fill the gap, using modern furniture making desire) (Sustain).	
in order to improve service delivery and standardizing the working procedure by eliminating was full activities and reducing the long	To implement basic 5S`s and practice to eliminate seven wastes	Au (Africa union) The greatest challenge for implementation of kaizen was employee attitude and misconceptions about kaizen. This was followed by insufficient participation by workers, ineffective training, Organization structure,	the kaizen unit focused the training of the staff and follow up on continuous improvement in terms of the effectiveness and efficiency toward strengthening the unit and properly implementation of the	Kaizen was intended to bring about radical changes in organizational structure, in eliminating long bureaucratic chains, in time consumption and to shorten the long work flow process, proper documentation and to bring effective and efficient delivery services to partners	Getu Assefa

work flow		ineffective kaizen performance measures, ineffective communication systems and others	first basic principles like the 5S, seven west removal method and other tools would have been contributed towards proper implementation of the Philosophy.	and structure of the Commission.	
In line with the AU	Implement basics kaizen tools and techniques	<p>Wonji/ shoa sugar factory</p> <p>The majority employees have negative impression on the kaizen suggestion system,</p> <p>Lack of established system for training and education.</p> <p>Lack of adequate training and information about kaizen.</p> <p>Lack of understanding about Kaizen management tools and techniques, as a tool.</p>	In line with the first	<p>Major changes in the Factory as a result of kaizen implementation,</p> <p>considerable improvement in productivity has been achieved through reduction in cost and cycle time, wise utilization of resources and increased efficiency.</p> <p>Kaizen implementation brought significant achievements regarding employee's freedom of</p>	Michael Tadesse

		<p>Misunderstanding by management in communicating Kaizen implementation planes, goals and values.</p> <p>Difficulty in comprehending Kaizen implementation practices and reporting results.</p> <p>Lack of necessary materials.</p> <p>Difficulty to break still rigid hierarchical structures</p> <p>Feeble coordination, communication and integration within departments.</p> <p>Lack of skilled man power</p> <p>Employee resistance to change</p> <p>Shortage of proper safety and health materials and</p>		<p>changing the work environment, opportunities of creating conducive working environment and related factors like employees' and management's work commitment for the factory in order to achieve its strategic objectives</p>	
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In Africa					
		equipment's			
<p>To implement kaizen and sustain kaizen practice which is to improve the customer satisfaction and increase manufacturing productivity and efficiency</p>		<p>The main challenges affecting kaizen sustainability in Kenia include lack of management support and ineffective training, ineffective performance measures, attitude and misconceptions about kaizen. Lack of participation of workers and organizational structure also pose challenges in sustaining kaizen events. Employees' commitment and financial constraints also the main challenge.</p>	<p>Upton's continuous improvement initiatives model focuses on accelerating performance improvement, maintaining consistent long-term objectives, and choosing periodic projects based on organizational ability. These focus areas appear to provide direct improvement in the chosen direction and provide a platform for future gains.</p>	<p>The company improvement in overall productivity due to sustained kaizen improvement. Equipment efficiency has also improved and there is reduction in processing time in overall manufacturing flexibility improvements, improvement in product quality have been realized to a moderate. Continuous flow of production recorded a weak relation with kaizen sustained improvement.</p>	<p>Anot Benter Akoth</p>

2.5 Sustainability of kaizen implementation

Because there is limited research on Kaizen event sustainability, this section reviews publications that discuss sustainability with respect to different process and continuous improvement methods. To address the sustainability of continuous improvement, Kaye and Anderson reviewed relevant literature and conducted semi-structured interviews. Their research resulted in a model that highlights the ten essential criteria of continuous improvement. Upton claimed that sustainability, continuous improvement over time, depends upon the underlying view of how improvement is achieved implicit in the actions of both managers and operators. Upton's continuous improvement initiatives model focuses on accelerating performance improvement, maintaining consistent long term objectives, and choosing periodic projects based on organizational ability [1].

To address the sustainability of various process improvement activities, Dale, Boaden, Wilcox, and McQuater identified key TQM sustainability issues through qualitative research and reference to relevant theoretical literature. Keating et al. worked with research partners to address general process improvement program sustainability. System dynamics modeling analysis explained both internal dynamics and external interactions that appear to influence the sustainability of process improvement activities. Oxtoby et al. also address general process improvement program sustainability and used qualitative research methods to identify 15 key factors that determine an enterprise's change capability [7]. Pillet and Maire surveyed 40 organizations to examine their performance across different types of improvement activities (e.g., 5S, ISO9000, etc.) and to understand the factors that they viewed as most important for sustainability. Across multiple process improvement activities, organizations sustained, on average, 40 percent of improvements, which further illustrate the difficulty that organizations have in sustaining improvements [6]. Based on the survey results, the authors created a model of process improvement sustainability that was based on three axes: organic state (the state towards which the organization will trend with no effort and absence of constraints), return on effort (reinforcing activities to encourage desired improvement activities), and facilitation (developing skills, group synergy, and simplified processes to support the desired improvement activities) (Pillet and Maire).

Many of these studies emphasize the following characteristics or activities in order to sustain improvement outcomes over time: communication within the work area and across various levels of the organization (top-down, bottom-up, and lateral communication), work area employee focus and commitment, improvement activity characteristics (e.g., project scope, goals, and improvement team dynamics), improvement culture, learning (education and training), management, measurement, and organizational structure and policies. Less commonly-noted sustainability characteristics are the impact of the external environment, external stakeholders, and team characteristics.

Learning (training and knowledge)

Knowledge of continuous improvement is based on a measure defined in Doolen et al. and relates to the extent to which the individuals have knowledge of the continuous improvement behaviors needed to sustain the change. To suggested that an awareness and understanding of continuous improvement knowledge may be important to the sustainability of improvement (e.g., Kaye and Anderson.). Learning behaviors, external perspective, experimentation, and internal collaboration, and group stewardship are based on the study of group stewardship and group learning behaviors by Groesbeck. Learning behaviors are frequently cited as important to improvement sustainability [9] [12]. External perspective can be described as the extent to which work area employees think about how their work relates to that of others, including to other work areas and the overall organization Groesbeck. Learning through external perspective can occur through opportunities to communicate with other work areas (Axtell et al.); communication across work areas may support continued improvement after a Kaizen event (Tennessen and Tonkin). Active experimentation with new ideas (Upton) has been found to be a key component of learning and knowledge development which may influence improvement outcome sustainability.

Active team work and group work

Internal teamwork refers to the extent to which team members synthesize their divergent views such that apparent conflicts are resolved through dialectical thinking, not compromise or majority rule (Groesbeck). Through internal teamwork, work area employees are able to share

experiences and lessons learned with peers; this exchange may influence improvement sustainability (Kaye and Anderson). Finally, group stewardship is defined as a collectively held sense of responsibility to oversee and improve performance in the group's area of responsibility in accordance with the best interests of the organization (Groesbeck,) [12]. The stewardship, or collective responsibility, of a group of work area employees may relate to their commitment to the improvement which may influence improvement outcome sustainability.

Improvement culture

Improvement culture is defined in this research as the encouragement of organizational improvement through management's support of the use of Kaizen events and continuous improvement activities among work area employees and Kaizen event team members. The existence of such efforts can be observed through management's support of work area employees and Kaizen event team members. For instance, Bateman and Rich identified a lack of management support as an inhibitor of Kaizen event sustainability. Specific practices related to improvement culture include recognition of employees (Oxtoby et al.), management support of a continuous improvement culture (Bateman and Rich,; Kaye and Anderson,), and allowance of time to work on continuous improvement activities (Bateman,) [4].

Organizational measurement

Performance review is defined in this research as the extent to which the organization measures and evaluates the results of the Kaizen event. The literature emphasizes the regular use of performance measurement and assessment mechanisms [4]. Specific practices related to performance review include the review of Kaizen event performance measurement data (Kaye and Anderson, Bateman), use of audits and audit reporting tools (Kaye and Anderson, Martin and Osterling, Patil,), regular follow-up meetings of the Kaizen event team (Martin and Osterling, Palmer), and regular follow-up reports and meetings to management (Goldacker, Destefani, Magdum and Whitman).

Commitment of top management

The poor performance experienced by most improvement program implementers is mostly caused by fading commitment and sponsorship of top management. Since improvement programs cut across functional departments meaning the deployment of it must be overlook by the overall boss who has the power to give instruction to every functional department. To enable top management commitment glow till the end; the improvement program must be considered the business priority in order for it to get the top management support it deserves. An executive steering committee should oversee the deployment of the improvement program ensuring that goals are set, priorities are compromised, proper selection of projects, resources are made available, and results are weighed against plan [1].

2.6 Kaizen sustainability challenges

Many studies note that, in both Japan and abroad, especially in the cases of American and European companies, leadership is the single most important factor for successful implementation and sustainability of kaizen (Imai, Kaplinsky). This implies that it is possible to apply kaizen in countries with different socio cultural contexts but that application must be conducted under proper leadership and with adjustments that reflect the uniqueness of the targeted society [11]. Shah and Ward argues that larger firms enjoy larger financial and human resources as well as economies of scale hence have better conditions for implementation and sustainability of new techniques in their firms as compared to small or medium sized firms.

Aoki found out that lack of organizational capabilities that facilitate an incremental organization wide innovation greatly hindered implementation and sustainability of kaizen in Chinese firms. These capabilities include capabilities that facilitate cross-functional communication, that which encourages worker's self-initiative and those that discipline workers (shop- floor based) so that they conform to kaizen standards [4]. Researchers who recognize the effectiveness of Japanese work practices state that Japanese companies have developed capabilities that make their workers or work teams learn and improve their work processes independently (Kenney & Florida; Koike).

On-the-Job Training (OJT) plays a critical role in creating such capabilities. Employees in Japanese companies experience various kinds of jobs through the OJT, which helps to reduce social distance between different categories of the workforce (Lam) [12]. In this perspective, it is organizational capabilities which facilitate communication among diverse people that allow Japanese companies implement incremental organization-wide innovation successfully. This supports the view that successful implementation and sustainability of kaizen is largely influenced by an organization's ability to develop these capabilities (Aoki).

2.7 Factors affecting continuous improvement

Job satisfaction: Locke, E.A. defined job satisfaction is the pleasurable emotional state resulting from the appraisal of one's job as achieving or facilitating one's job values and it is conceptualized as a general attitude toward an employee [8]. Job satisfaction is highly important because it is significant to the physical and mental well-being of employees, i.e. job satisfaction has relevance with human health and it is essential to understand the factors involved in job satisfaction to improve the wellbeing of employees [15].

Job security: Myths and Reality proposed an interesting starting point to define job security as the relative assurance, owned by an employee, that he/she is shielded against damages that would result from the loss of his/her work [10]. Morris et al., stated job security as one of the most important obstacle for change and it is directly related with the organizational commitment.

Commitment: according to Eisenberger, Meyer and Smith (2000) workers who feel that the organization is committed to them are likely to have a positive attitude. According to Mowday et al. organizational commitment is an attitude, which exists between the individual and the organization where it considered as a relative strength of the individual's psychological identification and involvement with the organization [11].

According to Erich J.Schwarz, employees who have positive attitude towards change in the organization become valuable employees to the organization. Apfelthaler, revealed employees recognized change with valuable training, which helped in the development of the employees with effective skill. Baumgartner described that most of the employees are not prepared for change. Employee's negative attitude towards change is due to the fear about job.

Principle of kaizen is focused on peoples or employee way of thinking also called mindset, the way of thinking will develop habit and standards (way of act) of employee; way of thinking and way of act can guide as to achieve the desired result or performed goal. Therefore factor affecting kaizen implementations toward sustainability by relating the kaizen principles are

- Active participation
- Commitment
- Team work
- Communication and
- Job responsibility

2.8 Research review

Kaizen philosophy is importance to improve and change working environment, to increase productivity and performance and also it help to produce high quality of products with minimum effort and cost. Many authors has discussed the kaizen concept and they perform case studies by cover some benefit including increase productivity, reduce cost, eliminate waste & defect, improved quality, improve safety and also improve customer handle.

According to Muhammad Saleem and his cowriter about total quality management and kaizen is a continuous change toward betterment are two fundamental concepts directly dealing with continuous improvement of quality of process and performance of an organization to achieve positive transformation in mindset and action of employee and management and they deeply analyses the difference between kaizen and total quality management (TQM) and identify different tools and techniques for both concept by using different literatures.

By Gratiela Dana, kaizen management is dedicated to the improvement of productivity efficiency, quality and overall company business kaizen management sometimes represent a solid strategic instrument with a view to lunch and handle the company objective with kaizen 5`s practice represent a fundamental technique which allows the improvement of efficiency and productivity.

According to international journal by Asayehgn Desta paper with kaizen implementation there are number of foreign companies are determined to attain habit of improvement using kaizen to

focus on customer driven strategy to improve productivity and quality of products and service by continuously a massing marginal improvement over time. He use primary data collection method questionnaires, interview and direct observation the study found that 3 pilot companies have reduce the cost of production, improved quality, reduced lead time, improved customer satisfaction and partially 3 out of 5`s kaizen practices were achieved during implementation (sorting, setting and shining) but the rest are not achieved.

On Bhargav Dave and his friend`s research, the main purpose of the researches is to partially evaluate the finding from a brief pilot project where lean was implemented on an infrastructure project. He also highlights the challenges and opportunities where identified during pilot implementation the researcher use as a methodology design science method due to the highly indicate nature of the development process the stage of evaluation also provided to the development stage of design and development. But the researcher does not included others model to differentiate the existing one but he outline the challenges that faced when the model in past visi lean work flow where implemented.

By Asmita Joshi case study continuous improvement is an essential requirement for sustaining and gaining a competitive advantage for the organizations. In his case study he defines and explains the major kaizen concept and system. The main objective of the case study is eliminate waste (Muda) of producing rejects, processing and creating excited work environment in the company where the company produces sheet metal and plastic components, by using kaizen implementation tools the researcher implement 5`s in the company he were show the before and after pitcher of quality system implemented in the company, where 5`s concept used in packing and storage then finally the researcher achieve some benefits like elimination of wastes (Muda), the worker or employees are self-explanatory and reduce rejects and also some results are achieved from kaizen implemented in the company.

The European journal of Bwemelo Gordian paper work kaizen is a Japanese business management concept that calls for continuous improvement has been introduces in Tanzania to strengthen small scale manufacturing enterprises and his paper focused to examines the acceptability and feasibility to kaizen among SSMEs in Tanzania. The government was support kaizen project as one strategic involvement for supporting and promoting manufacturing sector

growth, for survey this paper include 500 stakeholders and 23 pilot enterprises to use questionnaire's', interview and observation.

After collecting the data the data analysis shown in the acceptability of kaizen in Tanzania it is suitable and acceptable and also the feasibility of kaizen is show the implementation was effective. Finally the researcher conclude that kaizen as strategic for improving SSEMs performance is acceptance in Tanzania through its feasibility is very challenging.

Research gap

Previous studies have focused on kaizen implementation process and effectiveness of kaizen implementation are discussed and explained in detail. To the extent of the researcher's knowledge none of them have studied the specific kaizen implementation toward sustainability. Therefore this study is focused on to asses' the factor that affect sustainability of kaizen implementation process and the achievement of after the concept has been implemented.

CHAPTER THREE

3. BACKGROUND OF THE CASE STUDY

3.1 Background of HHMBI

Hibret Manufacturing and Machine Building is Located in Addis Ababa, Lideta Kifle-Ketema, Kebele 07, around Mexico Square and it covers an area of 97,025 square meters. This company was established by the agreement between our country and the Czechoslovakian government in Addis Ababa in 1945 E.C at an estimated cost of Birr 2,000,000.00 and invested capital of Birr 2,000,000.00. It was expanded in 1977 E.C with at expense of Birr 82,000,000.00. The main objective was to manufacture different types of ammunition of simple bullet, woodwork and metal work, medals and badges, and tools and spare parts.

Before the current name given as Hibret Manufacturing and Machine Building Industry, it was described by different names at different time frame by different groups. The names of the company were: His Majestic H/Selassie Ammunition Factory, Addis Machine Tools Factory, Addis Metal Pressing Enterprise, Tools and Spare Parts of Design and Manufacturing Center, Addis Engineering Center and Hibret Machine Tool Engineering Complex respectively

This organization passed through different situation of administration, Addis Metal Pressings Enterprise was established by the council of ministers Regulation No. 38/1990 in June 19, 1990 E.C by authorized capital of Birr 111,216,000.00 and paid capital of Birr 76,216,000.00 and administered under the development of government organization according to proclamation No. 25/1984.

The council ministers of the Federal Democratic Republic of Ethiopia government 101th regular meeting held decision number 2/ms101w284/1996 the Addis Metal Pressing Enterprise completely restructured and the rights and obligations of the organization will shifted to Defense minister of the country. This was provoked by the federal Negarit Gazeta 11th year No. 39 under the heading council of minister Regulation No. 102/ 1996. By using this power

Defense takes corrective measures and ordered to transfer the ammunition factory to Hormat Ammunition Engineering Factory. According to this order the main body of the factory i.e. Product equipment's, machines, etc. were transferred to Hormel Ammunition Engineering Factory. Thus the remaining workshops in the organization are: Tools and Spare parts Workshops (Mechanical workshop) Medals and Badges Workshops Metal and Product packaging Products The organization was working by the name of "Tools and spare parts of design and manufacturing center" under the Defense Industries Coordination Office starting from the date letter was written by the country's Defense Minister under protocol number "m3/st/2/t/1094/96 on t April 9, 1997 E.C. Again, letter was written from Defense Industries Coordination Office under protocol numbers "m3/st/2/t/357/97 on November 23, 1997 E.C. it was decided the name of the organization to be Addis Engineering Center.

Finally, the Defense Industries Coordination Office decided in December, 2000 E.C. the company to re-structure itself with a new name, Hibret Machine Tool Engineering Complex, by applying new management concepts to add some value to the countries staggering manufacturing industry.

Coming out of its past history, currently the complex was expanded to industry. It is now given the new vision and direction from the Ethiopian government and restructured itself, under the metal and engineering corporation, to meet the objectives it was established for.

The industry includes five factories and expected to undertake many activities and become role model in machine tool building.

Objective: - The core objective of this industry is to address industrial machineries, spare parts and capital goods demand.

Core Business:-Industrial machine design and building, component (Capital goods) manufacturing.

Specialization:-Production of industrial precision machineries & machine tools

Peripheral Business:-

- Providing training and consultancy over machine tools technology.
- Providing Material treatment and testing service.
- Pressing and engraving products.
- Production of Jigs, fixtures and dies.
- Production of bolt and nut

Hibret manufacturing and machine building industry has five factories under it, machine building factory, precision machinery factory, materials treatment, conventional manufacturing factory, and Engineering factory. Hibret manufacturing and machine building industry is selected for this study because it was implemented kaizen system in all shops by implement 5s (sort, straighten, shine, sustain and standardize), calculating through put time, visual management, doing SMED (single minute exchange dies), tool board for all workshops and improve manufacturing system.

This industry has kaizen promotion officers they focused on implementation of kaizen in the industry and follow up the kaizen event and productivity improvement but the implementation event of kaizen is not sustained because of some reason like failure of full management commitment, lack of communication, training system and lack of organizational encouragement due to this reason the manufacturing industry faced for interruption of production system, implementation process is not sustained, employee motivation and high inventory. So in order to improve the sustainability of kaizen implementation process the researcher focused on this industry.

3.2 Educational Back ground of employees

HMMBI has about 1477 employees; among these 143 are military, 1178 are permanent civil worker, 156 are contract civil worker. There are 198 first degree holders, 328 advance diplomas, 100 college diploma and TVET graduates with different levels, 852 are certificate, 10th grade complete and Below 10th grade. The educational background and distribution of labor in the organization is as shown below:

Table 5 Employee's educational background

S/no	Educational level	Military	Permanent civil worker	Contract civil worker	sum
1	First Degree	32	106	60	198
2	Advanced Diploma	39	239	50	328
3	College Diploma	48	10	1	59
4	TVET Diploma	03	29	09	41
5	Level IV	6	333	36	375
6	LEVEL III	2	272	-	274
7	LEVEL II	4	67	-	71
8	Certificate	-	35	-	35
9	10th grade completed and Below 10th grade	9	87	-	97
Total		143	1178	156	1477

CHAPTER FOUR

4. RESEARCH DESIGN AND METHODOLOGY

4.1 Research design

There are many definitions for research design according to C.R Kothari “research design is the arrangement of situations for collection and analysis the data in the sated objective and research questions by its procedure.” In fact the research design is the conceptual structure with in the conducted research and also it is blueprint for the collection, measuring and analysis of data [14].

According to Cooper and Schindler (2008) are view that, by forming a research design is used for an arrangement of methodologies (qualitative and quantitative), to achieve great understanding the researchers can follow methods which used frequency. Because, of this type of study will be conducted to provide detailed description about the existing phenomena and to justify current condition. To gather the required information, the researcher used both primary and secondary data. Tools include questionnaires from supervisors, team leaders and managements (Top, Middle and lower level) interview from three higher officers whom coordinate Kaizen implementation with in Service, Factory and development departments. For secondary data’s the researcher used various documents.

To collect the primary data, the researcher were distribute organized questionnaires to the respondents; the questionnaires prepared using Likert scaling questions. And also open ended questions would be included to facilitate the respondents to address the issues they want. Concerning secondary documents the researcher collect relevant secondary data from different published and unpublished document and the organization report has been conducted.

4.2 Data instrument and tools

The necessary data for this research is collected through primary and secondary data collection methods. The primary data are those which are collected once again and for the first time, and thus happen to be original in character of respondent. And the secondary data are those which have already been collected by someone else from book, articles, published document and which have already been passed through the statistical process [14].

Primary data: are a data collected through questionnaires' and in depth interview

Questionnaires: A questionnaire consists of a number of questions printed and typed in two forms for employee and managers (supervisors). The questionnaires conduct who knows about the subject matter and who are working on kaizen & productivity improvement both from employees and supervisors; it were contain characteristics of the respondent, sustainability towards the implementation of kaizen and suggestions will be included with the help of kaizen promotion office. The respondents have to answer the questions by them self. .

In depth interview: The interview method of collecting data involves presentation of oral verbal stimuli and reply in terms of oral verbal responses [16]. This method can be used through personal interviews and, if possible, through telephone interviews. In this research the interview focused for managers and supervisors of the factories because they understand basic concept of sustainability through kaizen implementation.

Secondary data: means data that are already available. Secondary data may either be published data or unpublished data. Usually published data are available in the form of various publications web sites, state are local governments, various publications of foreign governments or of international bodies and their subsidiary organizations, technical and trade journals, books, magazines and newspapers, reports and publications of various associations connected with industry, reports prepared by research scholars, universities, economists, etc. And also this research used different published and unpublished documents from different website, articles and reviewed the paper works which is related to kaizen concepts.

4.3 Data sampling

According to Brown, the right sample needs to be taken to ensure the reliability of the findings of the research and mitigate the risk of threatening the whole effort of the research [13]. This research gave significant consideration to ensure the sample represents the population so as to come up with possible conclusions from the sample outcome. Since the focus of this research is the selected machinist employees and some selected supervisor that has direct or indirect concern with the subject matter.

The selected sampling method is non probability sampling method which is called purposive sampling. In purposive sampling the researcher use to question defined groups which have full of information on the subject matter. In purposive sampling method the sample size have been taken purposely, because the subject matter of the research; the selected employee and supervisors were directly related to the implementation process since the initial stages were are 102 employees from four factories.

The study includes factories and staff of 81 employees selected out of 102 who can provide the expected information.

Table 6 Respondent sample table

Factories	Expert employees	Sample taken
Machine building	72	62
Conventional	16	12
Precision	9	5
Material treatment	5	2
Total	102	81

4.4 Data analysis method

In data collection and analysis part the data has been collected by using questionnaires and interview, the questionnaires prepared in the scale format that ask for agree/ disagree rating response of employees and it have in two forms of language which is English and Amharic. The questionnaires contain different parts which are sustainability of kaizen and challenges of sustainability. After collecting the data were analyzed and effectiveness of kaizen implementation sustainability process presented and asses by SWOT analysis and Cause and Effect (fish bone) diagram.

Plan-Do-Check-Act (PDCA) and standardize - do-check – act (SDCA)

The PDCA and its alternative is a cyclical process that involves:

- Determining the nature of problem, identifying the possible changes and the methodology to implement change
- Implementing the change
- Assessing the impact of change by establishing functional or causal relationships between changes in processes.
- Make the necessary modifications, before starting over again.

SWOT analysis

The SWOT analysis helps organizations assess issues within and outside the organization. The SWOT analysis, made up of an assessment of strengths, weaknesses, external opportunities and threats from competition, provides an outline for strategic decision-making.

Cause and Effect (Fish bone) diagram

The diameter helps the management trace customer complaints directly to the operations involved. The main problem is referred to Fish-head; the major categories of potential cause structural bones and the likely specific causes to ribs. It explores possible causes of problems, with the intention being to discover the root causes.

CHAPTER FIVE

5. DATA ANALYSIS, INTERPRETATION AND FINDING

5.1 Introduction

HMMBI is one of the factories established mainly to address FDRE Ministry of Defense and the country's demand under Metals and Engineering Corporation to manufacture industrial machineries spare parts and requirement. In addition to this it produces industrial precision machineries & machine tools and supply raw materials for different governmental and public mega projects. It also engaged with industrial machine design and building and manufacturing of various industrial components such as Pressing and engraving products, Jigs, fixtures and dies, bolt and nut Production.

To accomplish the mission given from the government it is organized in the following factories:

- Precision manufacturing factory;
- Conventional manufacturing factory,
- Mechanical sub system factory,
- Material treatment factory,
- Machine building factory.

The research focuses on assessing sustainability of kaizen implementation which is impact of efficiency to produce quality of products, having good work environment and respect customer due date to delivered products to the customers.

This chapter contains that raw data collected through questionnaire are organized and the company existing implementation system were discussed. The questionnaires were distribute for employees and kaizen team leader through a total of 81 questionnaires were distribute with the help of kaizen promotion officers but 66 questionnaires were collected properly filled and in addition 10 questionnaires were distribute for factories zone leaders (precision, conventional, material treatment and assembly, heavy duty, upgrading, inspection PPC and quality control

shop zone leader) all questionnaires are properly collected from the shop and factories zone leaders. Therefore only 76 (75 % of respondent rate) questionnaires’ were returned and compared to other studies 75% respondent rate was reasonable good. And all the finding presented below in descriptive study in order to know the degree of intensity and tendency toward the subject of kaizen.

5.2 Demographic variable of respondents

From the distributed employees questionnaires the employees can illustrate the demography variable of the respondent such as gender, age, work background and kaizen positions and this is presented below.

Table 7 Respondent of gender

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Valid male	35	46.1	46.1	46.1
Valid female	41	53.9	53.9	100.0
Total	76	100.0	100.0	

Table 8 Respondent age

Age	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 18-25	47	61.8	61.8	61.8
Valid 26-35	20	26.3	26.3	88.2
Valid 35-50	5	6.6	6.6	94.7
Valid above50	4	5.3	5.3	100.0
Total	76	100.0	100.0	

As indicated above from gender table a total 76 respondent 53.9 percent of the respondents are female and 46.1percent are male this indicates that in this research females are more participate this implies that in HMMBI females are more supported than male. And also as indicated the above respondent of age table most of the respondent ages are in 18 to 25 and this indicated that

more than half of the respondents are young and matured to participate actively they will be adopted new things.

5.3 Data analysis and interpretation

The quantitative data were collected from questionnaires and analyzed by using statically analysis tool. Out of the total number of factories and shop workers 76 kaizen core team members from precision, conventional, material treatment and machine building factories (assembly, upgrading, inspection and quality, heavy duty, PPC and quality control) is respondent of the questionnaires'. As it is indicated in the data methodology the questionnaires were designed using Likert Scale where almost all the statements were measured on a five point scale with 5 = strongly Agree; 4 = agree; 3 = No opinion; 2 = disagree; and, 1 = strongly disagree. The information obtained from the questionnaire are summarized and discussed below. Question number one regarding to communication with in the company respondent are shown below, all the questionnaires' are attached in appendix.

Table 9 Opinion of communication with in the company

Having good communication within the management	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	26	34.2	34.2	34.2
Disagree	15	19.7	19.7	53.9
Neutral	1	1.3	1.3	55.3
Agree	20	26.3	26.3	81.6
Strongly agree	14	18.4	18.4	100.0
Total	76	100.0	100.0	

As discussed above in the literature review part kaizen mean improvement, continues improvement involving everyone in the organization from top management to middle manager then to lower workers; the involvement of workers are helped by using communication.

As showed in the above table majority of the respondents that is 53.9 percent of respondent negatively responded on the good communication with management. However 44.8 percent of respondents responded positively were as 1.3 percent of the respondent is neutral. This implies that most of the respondents have negative impression on communication with the management.

According to Imai miscommunication may affect misunderstanding of kaizen philosophy, concept, misapplication of kaizen tools and techniques and confusion regarding the employee roles to responsibility of kaizen implementation. Communication is one of kaizen principles used to gathered information and data to solve the root cause of the problem.

As discussed on literature review one of the biggest principles of the kaizen approach is the ability to work in teams. Each department is considered a team and they will be responsible for making small changes that impact the organization. Through a continuing team work approach with interactive communications kaizen would improve their organizational capacity, empower employees, improve the quality of workers and add value of the product.

Table 10 Respondent on team based work

Having good relations with coworkers and team based work	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	24	31.6	31.6	31.6
Disagree	17	22.4	22.4	53.9
Neutral	1	1.3	1.3	55.3
Agree	11	14.5	14.5	69.7
Strongly agree	23	30.3	30.3	100.0
Total	76	100.0	100.0	

With regarding to the above team based on respondent table 54 present of the respondent are negative impression about they relation with coworkers and team based relations and 44.7 percent of respondents are positive impression wear as 1.3 percent are no opinion on team based and coworkers relation. From this majority respondents are argue negatively on team based work this implies that if they don't have positive opinion with coworkers kaizen implementation process is not sustained because of this type of problem.

According to Imai one of the biggest principles of the kaizen approach is the ability to work in teams. Each department is considered a team and they will be responsible for making small changes that impact the organization. So employees from top manager to front line workers should share common values, company objectives, and information to make a change.

Table 11 Respondent on employee opinion and suggestion

It is in consideration employees' opinions, suggestions in the company	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	14	18.4	18.4	18.4
Disagree	24	31.6	31.6	50.0
Neutral	4	5.3	5.3	55.3
Agree	19	25.0	25.0	80.3
Strongly agree	15	19.7	19.7	100.0
Total	76	100.0	100.0	

As shown in the above employee opinions table 50 percent of the respondent responded they are negatively argue the employee opinion and suggestion in consideration and 44.4 percent of the respondent are positive impression about the employee opinion and suggestion system and also 5.6 percent of employees are responded no opinion on suggestion system.

The suggestion system is one of the core principles of Kaizen. The system helps both management and workers to communicate two way communications and it also motivate values for employees. Furthermore as explained in the literature the impact of kaizen in work place or gemba is the beginning of suggestion system and also employees to communicate operational level issues in two ways (up and down level) and enhance workers morale also suggestion is one the principle of kaizen.

Also major of respondent have a negative impression on team work and suggestion system & responsibility it implies that there is weak system in team work and consideration of employees' opinions, suggestions and to give responsibility in the organization in order to increase team work and employee suggestion system; management of the factories have an energetic role in the employee according to Imia kaizen is improvement or continuous

improvement involving every one, done in every day and every-where to achieve the organization goal.

Table 12 Respondent on training system

Company have enough employee training program on kaizen	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	24	31.6	31.6	31.6
Disagree	31	40.8	40.8	72.4
Neutral	4	5.3	5.3	77.6
Agree	7	9.2	9.2	86.8
Strongly agree	10	13.2	13.2	100.0
Total	76	100.0	100.0	

In the above table out of the total respondent majority respondents 72.3 percent negatively argue on the company has given training for employees and well-known system of the training and education and 22.4 percent of the respondent are positive impression on it; whereas 5.3 of respondents have not opinion. This implies that majority of the sample are negative impression about the current employee training system and most of them are not comfortable about the training. So most of the respondents are not satisfied by current training system, continuous employee training and skill development has critical factor for generating and sustaining kaizen (*Imai 1986; Farris 2006*). Without systematic continuous or planned training on the subject matter and skill development program implementing and sustaining the practice might be a challenging issue.

Therefore from the above explanation it can be conclude that there are a weak practice in training system in the organization it also implies that there are gaps with in the concept and application of kaizen implementation system with in kaizen core team leaders and other employees. So in order to solve this type of problem the management should have planned schedule for training.

Involvement of employee

Kaizen can be implemented by improving every aspect of a process in a step by step approach, while gradually developing employee skills through training education and increased involvement resulting in organizational improvement.

Table 13 Employee involvement

Item	Respondent	Percent
Worker contribution in Kaizen programs	62	81.6%
implementation of kaizen practice and doing the future action plan	56	73.7%
satisfaction towards kaizen implementation	45	59.2%

With regarding to the respondent of having good worker contribution in kaizen program majority of the respondent 81.6 percent are negative impressions on it. And in other way majority of the respondent 73.7 percent are negatively argue on the implementation of kaizen practice and doing future action plan and also 59.2 percent of the respondent are not satisfied on the kaizen implementation process. This can be conclude as employees are not willing to participate in kaizen implementation even to do the future action plans and they are not contribute in kaizen programs.

Table 14 Worker involvement response

Worker involvement by decision making	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	29	38.2	38.2	38.2
Disagree	14	18.4	18.4	56.6
Neutral	2	2.6	2.6	59.2
Agree	23	30.3	30.3	89.5
Strongly agree	8	10.5	10.5	100.0
Total	76	100.0	100.0	

With kaizen team leader and zone leaders worker involvement in kaizen decision making in work place out of total respondent 56.6 percent are negative impression and 40.8 percent of respondents are positive impression on worker involvement in kaizen whereas only 2.6 percent are no opinions on it. It can be concluded from the respondents’ opinion majority states that they have negative impression on worker involvement in kaizen program with respect to work place. This implies that the organization does not follow employees whereas when kaizen were implemented worker involvement is the basics.

According to Dysko (2011) also argues one of the competitive “weapons” for Japanese companies is the involvement of employee to their human potential in the maintenance of implemented changes in gemba Kaizen.

Kaizen implementation challenges

Kaizen is continuous improvement it need continuous implementation process not start end process. In kaizen practice to sustain and improve the process continuous process help to show as the changes and the implementation process should be checked. For kaizen implementation process management commitment is needed and full of motivation and coordination is necessary without systematic continuous training on the subject matter implementing and sustaining the practice might be a challenging issue.

Table 15 Respondent on kaizen implementation challenges

Item	Frequency	Percentage
lack of motivation are challenge for kaizen implementation	65	85.6%
Lack/ weak of management commitment	58	76.4%
Lack of coordination, communication and incorporation with in kaizen implementation process	63	82.9%

As showed in the above table majority of the respondent responded 85.6 percent are positive impression on lack of motivation are challenges for kaizen implementation process, 76.4 percent positively responded on in the organization there is lack of management commitment and also 82.9 percent respondent responded positively with in kaizen implementation process there is lack of coordination, communication and corporation with in the department. This implies that lack of management commitment, communication, coordination, and corporation is the most challenges for kaizen implementation process.

Kaizen implementation opportunity

Table 16 Respondent on kaizen implementation opportunity

Item	Response	Response
Kaizen provides opportunity to participate in decision making	Frequency	62
	Percentage	81.6%
Kaizen improved, process cycle time & through put time, on time delivery, visual management and floor space usage	Frequency	55
	Percentage	73.4%
Kaizen enhances employee’s ability to measure effect of change in the work area	Frequency	44
	Percentage	59.1%
Management and employee believe kaizen is necessary	Frequency	70
	Percentage	92.1%

As respondent opinions 81.6 percent are positively responded that kaizen help to provides opportunities to participate in decision making for employees.

In the other issues Kaizen improved, process cycle time & through put time, on time delivery, visual management and floor space usage majority of respondent responded 73.4 percent of respondent are positive impression on it. This implies that they believe that kaizen improve the

factories on time delivery and the product through time and cycle time needs employee's knowledge and skills to improve continuous improvement.

With the last two questions regarding with enhancing employee's ability to measure effect of change in the work area 59.1 percent of respondents are positive impression on it and 92.1% of respondent have a positive impression on management and employee believe kaizen is a necessary tools to improve the work environment and to improve the organization productivity. This implies that the cooperation management and employees believe kaizen is necessary to improve the organization work place. If it done correctly kaizen also helps to improve work place, eliminate hard work and teach people how to perform best of their capability and reduce waste of manufacturing process.

From the above discussion it can be conclude in case of management or factories team leaders they have a positive impression about kaizen provides opportunity to participate in decision making, improve product deliver time and shop floor activities, improve knowledge and skills, management and employee believe kaizen is necessary tools and enhance employee ability to measure effect of change. All those are listed above is opportunities of kaizen implementation.

In addition to this, the researcher interview with key official also shows that resistance to change was the biggest challenge during implementation. Besides this, the key official also stated, through continuous step by step meeting with front line workers and by showing the progress of the working environment, management has been in the process of overcoming the problem.

Table 17 Respondent on perception and encouragement

Item	Frequency	Percentage
Good participation to solve root cause	54	72.4%
Management encourage employees	65	85.6%
Well communication employee and management to improve the company	57	76.3%

From the above table 72.4 percent of respondent says that it is not good habit or practice on solving root cause of the organization problem for kaizen implementation and the rest 27.6 percent are positively support there is good practice to solve root cause of the organization kaizen implementation. On the other hand 85.6 percent of respondent are responded management does not encourage employees and the other 14.4 percent of respondent are agree on the management encouragement is good. But as discussed on literature review the main characteristic of kaizen is finding the root cause of error made and modifying through management encouragement it is good practice to improve employee's knowledge and skills. 76.3 percent of the respondent was responded negative impression on well communication employee and management to improve the company productivity and the rest 20 percent of respondent have positive impression whereas 3.7 percent has responded on no opinion. Therefore from the above explanation it may be conclude 76.3 percent of the respondent has unclear impression on communication new idea managers with employee. Through this employee and management communication with new idea has impact to disappointed implementation of kaizen and to sustain.

In addition to this, the researcher's observation and interview with key respondents confirmed that, lack of necessary materials and equipment's were also the major challenges observed.

Hence, it can be inferred from the above explanation that, incentives were the least challenges stated by the respondents. Despite the fact that, lack of necessary materials, lack of adequate training and information about Kaizen, and good team spirit and motivation were the constraints narrated by respondents. Therefore, it is possible to say that, where these elements are not adequate or lacking. It is very difficult to assess practical implementation and standardization.

Sustainability of kaizen challenges

Table 18 Respondent on kaizen sustainability challenge

Item	Response	Value
Management commitment	Frequency	68
	Percentage	89
Lack of communication	Frequency	54
	Percentage	71
Having active participation(follow up)	Frequency	21
	Percentage	45.6
Job responsibility	Frequency	53
	Percentage	69.7
Good team work and motivation	Frequency	64
	Percentage	84.8
Lack of material	Frequency	56
	Percentage	73.9
Training based on the application of kaizen	Frequency	69
	Percentage	91.3
Organization encouragement	Frequency	67
	Percentage	89.1

In the above based on challenges through management and employee table 76.4 percent were responded positively on management commitment is one of the challenge to implement kaizen and the rest 23.6 percent of respondent responded negative impression on it, based on lack of communication 71 percent of sample respondent have a positive impression on through lack of active communication the implementation faced for seasonal work, 89 percent of the respondent responded on lack of active participation and the rest 11percent agree on active participation, 69.7 percent of the respondent were take job responsibility is the major challenge for kaizen implementation and to sustain it and the rest 30.3 percent of the sample respondent says that job responsibility is not the challenge to implement kaizen.

Therefore this can be concluding according to kaizen principles, workers have to thoroughly understand kaizen principles and also believe it is an effective management tool. So they need to believe in the ideas of Kaizen and try to obtain the small goals in order to achieve the overall success. A strong commitment to the disciplines and kaizen methods will prove success for a company and also doing by PDCA wheel the overall activity can be archived

And also in the above table of management and employee sustainability challenges out of total respondent 84.8 percent of respondent was responded that there is challenge for good team work and motivation, the rest 15.2 percent were responded on there is no challenges faced by team work and motivation, 73.9 percent of the respondent responded on necessary material this implies that with lack of necessary material kaizen implementation where faced as challenge and the rest 26.1 percent they don't accept lack of material faced for different challenges, 91.3percent of the sample response shows that on application of kaizen training this implies that 91.3 percent of respondent have a positive impression different challenges came because of the organization does not give applicable training on kaizen and the rest 8.7 percent were argue on it and 89.1percent are challenge come through there is no organizational encouragement. With this understanding it can be conclude that the major and main challenges come through the application of kaizen training then there is no encouragement within the organization by this the team sprite have no strength and poor motivation to perform the give task, and haven't necessary material and equipment.

According to the officials, it needs commitment of the management and staff to generate internal capability of HMMBI and preparing professional teams. The following points are stated from both in-depth interviews and survey respondents. They point out to solve these problems:-

- ✓ There is a need to change the traditional culture of the stuff and creating acceptance the techniques of kaizen by penetrating the structure of the organization.
- ✓ Preparing professional team to facilitate training, follow up and evaluation of performance of the staff.
- ✓ Setting objectives concerning continuous improvement and the necessary measures to achieve them.

- ✓ A need to educate and instruct each employee in order to be able to use the techniques of continuous improvement.
- ✓ A need to give recognition for results obtained by organizational staff concerning continuous improvement.
- ✓ A need to promote and give awards for hardworking staffs and improve the working environment.
- ✓ Creating better communication and good relationship between staff members and the management team. Additionally there is a need give regular performance feedback.

5.4 Result and Discussion

The researcher has conducted qualitative data to support the quantitative data and also identify the root cause of the major sustainability problems encountered in the kaizen events, analyze through basic problem solving techniques and generate alternative solution which can bring different outcomes valuable to the existing kaizen implementation events.

Factor affecting kaizen implementation

The factor affecting the sustainability of kaizen implementation event in HMMBI are management commitment, employee involvement (team work, opinion and suggestion), training system, management encouragement, clear objective setting and measurement, availability of resources and existence of cross-functional teams are among the factors contributing to the success of Kaizen implementation based on interviews with kaizen team members of the factories.

Challenge and opportunities in kaizen event

Even though many organization understand the need to implement kaizen event at their workplace not all companies are successful with their implementation. The reason is because managing kaizen activities is not an easy task, organization workers has identified challenges to sustained kaizen implementation events such as management commitment, communication, job responsibility, application of kaizen training, good team work and motivation. This was followed by insufficient participation by workers, ineffective training, organization structure, ineffective

kaizen performance measures, ineffective communication systems and others. Economic constraints and lack of management support posed least extent of challenge in kaizen implementation in the respondent firms.

The greatest opportunities in HHMBI to implement sustainability of kaizen event are providing to participate in decision making; management and employee believe kaizen is necessary tool, high potential worker and access of material and technological tools are good opportunities to sustain kaizen events.

By Aoki on organizational capabilities that facilitate kaizen implementation, successfully implementation of kaizen is dependent on how well an organization is able to manage capabilities concerning employee attitudes, misconceptions about kaizen, and ensuring sufficient participation by workers in kaizen activities, and also the importance of training and skills development is useful for the implementation of continuous improvement.

The identified challenges and opportunities are:-

- Information flow
- Miss understanding of each other's
- Lack of team work and participant
- Un-proper use of material and unutilized resource
- Skill based training
- Lack of management support and encouragements
- High interaction of each other
- Access of material and high skilled personnel
- High potential of worker

Kaizen implementation in HHMBI

As discussed on the introduction part of the research, HHMBI where implemented kaizen with the help of Indian Kaizen Institution however now a days the organization does not sustained implementation of kaizen event because of some reasons like lack of effective training, lack of information, lack management support and follow up, organizational culture, and management commitment. But through the help of kaizen promotion officers the kaizen implementation

activities can revive in new way but it is not enough to say it is sustained and also regarding with quality department by making 5^s workshop and office check list the department can participate kaizen events in supportable way. The check list where prepared by kaizen promotion officers in to two types those are for machine shop and office. And they distributes for all office and factories zone leaders and the distributed check lists will filled by the zoon leaders through day to day activities; a good things and opportunities to sustain kaizen implementation each factory's workers every day they have briefing and debriefing sessions with their managers.

After the briefing session all meeting participant workers clean their work stations thorough cleaning they check the machine, materials and equipment's and also after debriefing session workers again clean work station and make ready work material or gemba for the next shift or the next day. After the check list collected kaizen promotion officers prepared a check list to rank staffs and factories with respect to the given data and their observations. Sometime shop and factories zone leader fill the check list incorrectly and also they don't return the check list so to check it kaizen promotion officers visit workshops and factories every day. But the implementation of kaizen now a day is not enough to sustain the event; so in order to sustain kaizen event within the organization management must straggle to give appropriate direction to the workers.

SWOT Analysis

Before starting on a kaizen event, management needs to be passionately committed to undertaking an assessment of the internal and external conditions of its company to determine how it has tailored its activities to meet the needs of its customers and solve the problems. In short, with a good understanding of the mission and internalizing the vision, the brainstorming team needs to analyze the current situation to identify problems using the SWOT analyses. Specifically, using the SWOT framework, the team of the company analyzes the company's 1) strengths and its important capabilities, 2) weaknesses, 3) opportunities - external trends where advantages can be taken, and 4) threats - external movements which may cause a problem or have a negative impact on the firm's.

Table 19 Company SWOT analysis

Strength	Weakness
<ul style="list-style-type: none"> • It has a capacity building center(Institution) • High governmental support • Access to raw material • High manpower capacity • High skilled manpower 	<ul style="list-style-type: none"> • Lack of management support • Lack of management follow up • Communication gap among others • Limited skill of kaizen event • Ineffective training • Absence of motivational schemes for employee • High unutilized resource and manpower • Poor management system
Opportunity	Threats
<ul style="list-style-type: none"> • Low labor cost and availability of labor market • Governmental support and police for the sector • Create job opportunity to employee • Access technological tools and system • Access to high skilled personnel inside and outside the firm • High interaction each other 	<ul style="list-style-type: none"> • High inflation that Could affect the company's market • High degree of competitors may wipe out the market position the company • High manpower firing

Cause and effect analysis

To point out the most factors which are helpful in analyzing the assignable causes in the kaizen sustainability process, different causes are grouped into six major categories. The major assignable causes of sustainability are identified through interviewing kaizen team members, machine operators, and kaizen promotion officers. The identified causes of sustainability kaizen are communication, culture, participation, commitment, encouragement, and limited skill.

The various causes of each factor were determined and shown in Ishikawa diagram (Fish bone diagram).

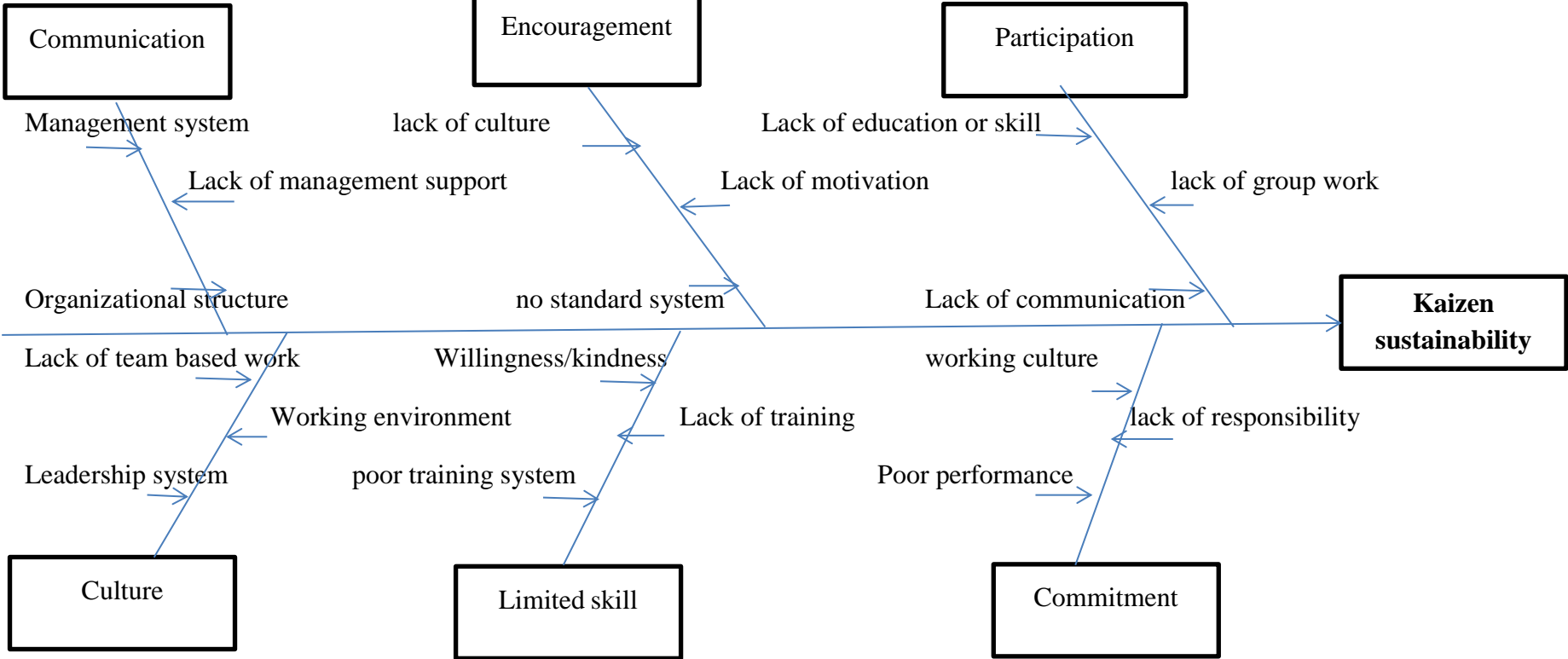


Figure 6 Company cause and effect analysis

The data collected from the organization workers questionnaires' and through conducted interview respondent and reviewed published and unpublished articles. The factors that affect and challenges for sustainability of kaizen event are analyzed using root causes and SWOT analysis. The study has analyzed root cause of the sustainability of kaizen grouped in to six main categories culture, limited skill, commitment, participation, encouragements and communication. SWOT analysis has identified the organization strength, weakness, opportunities and threats.

So in order to the sustainability of kaizen event it must needed continuous follow up process or ongoing activities which is strategical planning, performance measurement, knowledge and management change is important to sustain kaizen events.

The existence of problem solving such as quality circles and cross functional group working together to implement Kaizen are also usefully found to be a catalyst towards Kaizen implementation (Marin-Garcia et al.). Some studies show that employee's empowerment is very important to the success of Kaizen implementation (Bessant, Womack et al, Liker & Hoseus,). This is because through employee empowerment, more people will be involved actively in problem-solving process and it can also increase the sense of responsibilities towards finding the right solution.

Table 20 Before and After implementation analysis

Before	After
Time manner plan	Use strategical plan
Display boards are placed in each corners but they don't use update information	Display boards are placed in each workshops to show or display performance and pending actions with them responsibility
Organizational reward and recognitions are not take place	Workers award and recognition are take place in good way
Training are prepared but it not consider skill or knowledge based	Training are develop using technology and skill based

CHAPTER SIX

6. PROPOSED KAIZEN IMPLEMENTATION PROCESS

6.1 Introduction

The main objective behind proposing and developing sustainable kaizen based processes in a HMMBI organization is to enhance customer satisfaction through improving the quality of its product and services and also improving the working areas. Such improvement can be achieved by eliminating process waste, working environment, defect products, inventory levels and creating continuous flow based on workers pull, rather than push mechanism.

6.2 Continuous Improvement Sustainability Framework

Based on the above discussion the following implementation process is necessary to sustain kaizen implementation process in the organization toward those factors. Some articles discuss that a strong and committed leadership is required to sustain CI in the long run. Nilsson-Witell, Antoni & Dahlgaard [3] also recommend that managers are responsible to lead the CI process; however, employees must be included with defined and clear goals.

Knowledge management is often described as education and training in the literature. Gieskes & Ten Broeke [4] emphasizes the strong relationship between a learning organization and successful CI-oriented firms, particularly bringing knowledge as well as creating knowledge from past experiences. Regarding performance measurement, the findings from this study clearly recognized that CI goals need to be measured. The results obtained from improving initiatives need to be quantified and diffused through the firm. This finding is also supported by authors such as Leonard [5] and Atkinson [6] who highly recommend the use of a structured measurement mechanism that raises awareness of management and employees regarding progress of CI, and the opportunities where different courses of action need to be taken. In terms of sustainability, Cassell [1] is very clear in stating that sustainability is represented by the achievement of goals; therefore, continuous achievement of simple indicators such as supplier performance, customer performance, and internal performance can describe a sustainable CI

process. Based on the data gathered through questionnaires', interviews and factory visits, the study developed a set of recommendations for each supporting construct to achieve CI sustainability.

Strategic Planning This construct is highly critical. At this level, companies explicitly express their commitment to pursuing CI in order to meet customers' requirements, while also remaining organization to be profitable. Thus, making CI part of the strategic plan will ensure resources are allocated all over the organization. In addition, top-down goals will be oriented to achieve CI initiatives. Also especially for those who perform supervisory roles such as managers, and supervisors is to serve as a role model for the CI philosophy. Continuous evaluation of metrics performance and direct involvement in identifying improvement opportunities and developing solutions is required to permeate CI into the organizational culture. Finally, a clearly defined structure that identifies CI leaders is needed. Although CI is every employee's responsibility, identifying a leader usually the Manufacturing Director allows CI performance to be tracked by the top management level and defines required action to be taken to improve efficiency.

Change Management is vital to supporting CI. The need to meet customers' requirements is the direct cause for the implementation of change. Therefore, this direct link must be explicitly relayed to workers. When workers do not see a connection between the need and the methods, there is a high resistance to taking steps in a new direction. When deciding to pursue CI, firms must know that change becomes constant within the firm, thus resources such as company-wide meetings, company bulletins, and weekly staff meetings should become a setting to discuss current and future change. Change can result in fear, and workers want to feel safe; therefore, flow of information becomes crucial. Another observed practice benefiting change management is the reward of reached goals. Recognition of positive performance will raise awareness of positive results and increase the willingness to be part of a success story.

Knowledge Management Knowledge must become an organization asset. Knowledge can be introduced in the organization through training, but also can be collected as lessons learned. As training, knowledge helps the organization acquire the desired skills to implement CI. Done in a continuous manner, training will ensure that the organization has access to latest improvement tools and techniques. Also, CI must become a required skill on every employee's development

plan to perform their job effectively. As lessons learned, knowledge offers multiple benefits. Among the benefits is a "knowledge pot" sharing proven successful initiatives and reducing time in problem solving. Finally, a strong suggestion is the fusion of information technologies with education. Interactive training classes can be developed and made available to workers through a web-based company university.

Performance Measurement Establishing a set of metrics is a foundational suggestion. Organizations that do not follow up on CI performance will not be successful. Moreover, metric boards must be accessible to workers. These metric boards not only will display performance but also list pending actions and responsibilities. This effort clearly defines accountability for the CI process. Employees in supervisory roles, especially at the operational level such as manufacturing floors, are required to follow up on a daily basis on these indicators. This way, everyone knows that delivering results is perceived seriously by the organization. Finally, the last recommendation is to link performance to reward. Even though CI bring benefits to the company, it is important for employees to feel appreciated and to know that all the hard work towards a goal benefit not only the organization, but the employees as well. The success of Continuous improvement depends upon a supportive organizational environment, which relies on developing Continuous improvement inside a learning organization. This organization must be willing to go through experimentation, risk taking, and change adoption, relying on the leadership of managers, supervisors and owners of the Continuous improvement.

Continues improvement sustainability frame work and management practice	
Strategical planning	Performance measurement
<p>Define continuous improvement as strategic goal to achieve performance excellence</p> <p>Falls this goal in to department and individual goals</p> <p>Define continuous improvement leader incorporate his/ her report in staff meeting to follow up on weekly basis</p> <p>Set up continuous improvement role modeling expectations to managers and supervisors. Discuss with them to report the financial impact of improvement on time base</p>	<p>Each goal must be measurable and select a metric for each defined goal</p> <p>Use past performance result to set up new metrics</p> <p>Create display boards and display them where workers can see them and follow up on required action</p> <p>Link performance to awards establish a periodical performance bonus plan to reward continuous efforts</p>
Knowledge management	Change adoption
<p>Use technological tool to spread knowledge</p> <p>Develop training plan using success stories, support this training with technology based classes such as online session</p> <p>Capitalize knowledge train employee to teacher and share experience rotate workers to spread knowledge</p> <p>Develop certification plan for strategic employee linked to specific contribution using continuous improvement methods</p>	<p>Award and give recognition when change is accomplished and goals are reached</p> <p>Spread the word about successful teams embracing change and their actions</p> <p>Set together manager and worker to discuss in some point and answer questions about change. Also listen to people and give as much information as can</p>

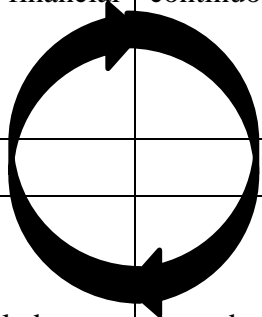


Figure 7 Continuous improvement sustainability frame work

Identify problems: - the first step is identifying problems the factories kaizen team leaders and member identify the problem that occurs in the shop floor through brainstorming or by go to Gemba. The group would use rule of Gemba where when abnormality occurs go to gemba, gather data using all five senses, check Gembustu (machine, material, failures, rejects and unsafe conditions), take temporary counter measurement on the spot and take action based on data.

Data collection: - in this step the data will collected were the problem is caused by lack of skill, training, communication, commitment, materials or the system. After identifying problem the shop floor or factories they tend to select and decide the priority among the identified problems by using the collected data.

Define target: - in this step team leader and commits set or define target to solve the common cause of the problems. If the problem is related to skill, training, communication, commitment, material and training system they also define the scope.

Gemba kaizen work shop: - after the defined target team looks to target and then goes to look to gemba and start analyze the problem and possibilities how to solve them. Then the action plan is developed, if necessary team is split in to smaller group. To control the developed action plans and goes on plan some checklist, photos before and after change the progress and improvement are necessary. Each employee has assigned a task for which tasks responsibility. In the case of action of key decision he/she discusses with them management; finally the team prepare the presentation with progress and results on shop floor and all together will present. After presentation employee express their opinion or felling about implementation, develop new skills or not. Gemba kaizen work shop will be done for the commit agreed X days.

Visual result of gemba kaizen: - after work shop kaizen it is important to visualize results from it. Based on the factories change display visually all the changes and it is important to display and show the changes, to develop new things and systems. Were the changes/ information can display by visual management every peoples understand the changes because human beings collect information by eye 83%, 11% ear, 3.5% sense of smell, 1.5% sense of touch and 1% is by taste. Done for X days

Check future action plan: - if some changes are accomplished or problem are still persisting take future action plan for employee but every things goes well new process and sustainability to be standardized. Done for X days

Review the status and sustainability: - if change improvement on place where kaizen was performed and also all opened tasks were already completed. The action will be to standardize the result or if it is not completed review the status is important.

Standardization: - in this step standardize is process help to maintain the achieved improvement standardization help as Wedges to prevent the process get back to previous status; to strength the standardization step SWOT analysis is important to check the factories strength, weakness, opportunity and threats.

Specialist and managerial visit: - every time go to gemba and make let's say Gemba walk through process where kaizen were performed. The reason to make survey about success and functionality of kaizen implementation were improvement. During specialist and managerial talk, managers talk directly with people working there.

Act correctly to sustainability: - sustainability depends not only on standards, but it also on system of training, discipline and moral to encourage employees.

Evaluate by experts; - after all actions are performed in the sated objective or not the expert or commits will evaluate. If any problem persist for long time or not experts and commits sets immediate corrective actions.

CHAPTER SEVEN

7. CONCLUSION AND RECOMMENDATION

7.1 Conclusion

Kaizen implementation in HMMBI was found good in the beginning and it brought significant improvement in different activities. The study was assessment of kaizen implementation and challenges toward sustainability through this results and finding were discussed by quantitative and qualitative data analysis document. Based on the data analysis result the researcher drawn a conclusion; factories managements and employees believe kaizen is a necessary tool to change work environment and improve productivity of the organization whereas from the sample of respondent the current implementation process is not sustained this is due to lack of communication, weak team based work, lack of employee encouragement, failure of full management commitment and training system.

According to the data obtained from questionnaires', interview, published documents, articles and companies data the failure of kaizen implementation events are miss communication with in the work area and across various level of the organization, work activity characteristics, culture, learning (education training), organizational structure and polices, team work(participation), encouragements, commitments and others. From this some are analyzed by using root cause grouped in to six main categories like culture, commitment, communication, encouragements, participation and limited skill training and also the SWOT analysis are identified. So in order to sustain kaizen events continues follow up process is necessary and for this continues or ongoing activities strategic planning, performance measurement, knowledge and change management is important to sustain kaizen events.

7.2 Recommendation

Based on the finding and conclusion of the study; the researcher would like to forward the following recommendation

- The Ethiopian kaizen institute should conduct continuous follow up and provide outgoing support in order to sustainability implementation process and in addition to this providing kaizen implementation progress is very important to encourage better achievement.
- To sustain the implementation process management should encourage employees and give some respect what they say or what they done and also management must change their attitudes.
- It would be advisable to provide sustainable training based on the application of kaizen for all members of the factories. Particularly new employed to ensure sustainability of the full implementation process
- The industry is also advised to modify its Kaizen implementation process to solve all the factory problems including employee and management relationship and the factories Kaizen team leader and zone leader in order to resolve any problems. The major success of Kaizen is making implementation of Kaizen sustain, thus the factory is expected to communicate and create awareness about Kaizen, for its workers and participants by using different media to maintain sustainability.

Future research direction

After conducting this research and analyzing different aspects of kaizen implementation events, the following research areas are recommended to be undertaken in the future on similar topic.

- By assessing employee attitude developing continuous kaizen implementation process.
- The efficiency of kaizen implementation in this company and others company
- Improving productivity of company implementing kaizen methods and data management system.

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Appendix A

Daily 5 S checklist/																															
Responsibility		KO				period-									Frequency : every day at 2 AM																
Date →		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
		S.n	Check point																												
1	check the area is clean from dirty																														
2	Is there any material on the floor																														
3	Is the equipment Is arrange																														
4	The standard are kept																														
5	The machine is neat and lubricate																														
6	The shelves & trolleys are free																														

Appendix B
ADDIS ABEBA UNIVERSITY
INSTITUTE OF TECHNOLOGY
SCHOOL OF MECHANICAL AND INDUSTRIAL ENGINEERING
POSTGRADUATE PROGRAM ON INDUSTRIAL ENGINEERING

Dear Respondents, I am postgraduate student of the above institution mentioned and now I am undertaking a research by using your company as case company. This questionnaire is designed based on the Topic: **Assessing Kaizen Implementation and its challenge towards employee's attitude in Hibret manufacturing and machine building industry.** The main purpose of this questionnaire is to obtain information about overall experience with Kaizen implementation and challenges come up on Kaizen Implementation in your Organization.

The quality of the result of this research is based on the accuracy of the information you provided. In order to be useful your responses, all responses to the items contained in this questionnaire must accurately reflect your true opinions. Please take a few minutes to provide your honest opinion about each statement. Your honest opinion is very valuable to the success of this study

Any information you give would be kept confidential and it is for academic purpose only.

Your kind cooperation is very much appreciated.

With best regards,

QUESTIONNAIRES FOR EMPLOYEES

Part I Demographic Information

1. Gender: Male Female
2. Age; 18-25 26-35 35-50 Above 50
3. Your kaizen practice positions _____
4. Your work area / position _____

Part II please gives your answer for the given question

5. Do you implement kaizen in your work place?

A. Yes

B. No

6. If your answer for question number five (5) is **yes**, what type of Kaizen tools/ techniques/practices have you applied on your workplace?

7. What do you essentially need in order to fully implement kaizen in your workplace?

8. Do you like being part of Kaizen participant in your work station?

i. Yes

ii. No

9. If your answer for question number eight (8) is **“No”** please specify the reason.

Part III please make mark your response the best statement describe by the listed mark

- Strongly agree - 5
- Agree – 4
- Neutral - 3
- Disagree – 2
- Strongly disagree - 1

No	Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
10	Do you think that communication within the management is good					
11	Do you think the employees' opinions, suggestions and responsibility are given in consideration in your company					
12	Do you think you and your coworkers have good relations in the workplace or do you have team based work					
13	Do you think your company has a consecutive (constant) employee training program on kaizen					
14	In what range the worker contribution can be explained in Kaizen programs in your workplace					
15	To what point the worker involvement can be explained in Kaizen decision making in your workplace					
16	How was the implementation of kaizen practice in the last years with doing the further action plan					
17	There is a well-known system for training and					

	education in the organization					
18	High level of satisfaction towards kaizen implementation and Training facilities provided by the company					
19	Lacks of motivations are challenges for Kaizen implementation					
20	Company helps you to develop your skills					
21	Top management commitment, visionary leadership and support are weak					
22	Do you believe during the time of kaizen implementation I Feel satisfaction					
23	Do you believe there is lack of coordination, communication and integration within departments of Kaizen implementation					
24	There is a well-known system to find the root cause of a problem and Solving problems being in group is great					

Thank you for your participation

If you have any suggestion or comment regarding with kaizen practice please write on back of the page

የሰራተኛ መጠይቅ

ክፍል 1 የግል መረጃ

- 1. ያታ ወንድ----- ሴት-----
- 2. ዕድሜ 18-25 26-35 35-50 ከ50 በላይ
- 3. በካይዘን ላይ ያሎት ሀላፊነት-----
- 4. የስራ ክፍሎ/ የስራ ሀላፊነት-----

ክፍል 2 እባኮን ባለው ክፍት ቦታ ላይ መልሱን ይግለጹ

5. በስራ ወረዳዎ ካይዘንን ተግባራዊ ያደርገዎልዎ

አዎ

አይ

6. ለጥያቄ ቁጥር 5 መልስዎ አዎ ከሆነ በስራ ቦታው ላይ ምን አይነት የካይዘን መሳሪያዎች፣ ቴክኒኮች/ተግባሮች አከናውኑ?

7. ሙሉ ለሙሉ ካይዘንን በስራ ቦታዎ ላይ ተግባራዊ ለማድረግ እንዲሁም ለማስቀጠል አሁን የሚያስፈልግዎት ምንድን ነው?

8. በስራ ቦታዎ ላይ የካይዘን እንቅስቃሴዎች አካል መሆንዎን ይወዳታል?

ሀ. አዎ

ለ. አልወደደውም

9. ለጥያቄ ቁጥር 8 ምላሽዎ “አልወደደውም” ከሆነ ምክንያቱን ይግለጹ?

ክፍል 3 ዝርዝርን ሊያብራራ የሚችል ምላሽምን በምልክት ይግለፁ

በጣም አልስማማም -1

በተወሰነ መልኩ አልስማማም - 2

ስምምነትም ተቃውሞም የለኝም - 3

በተወሰነ መልኩ እስማማለሁ -4

በጣም አስማማለሁ - 5

ተቁ	ዝርዝር	በጣም አልስማማም	በተወሰነ መልኩ አልስማማም	ስምምነትም ተቃውሞም የለኝም	በተወሰነ መልኩ እስማማለሁ	በጣም አስማማለሁ
10	በድርጅቱ ውስጥ ያለው ግንኙነት ጥሩ ነው ብለው ያምናሉ					
11	በድርጅቱ ውስጥ የሰራተኛ አስተያየት፣ጥቆማ እና ሀላፊነት ተቀባይነት አለው ብለው ያምናሉ					
12	በስራ ቦታው ላይ እርስዎ እና የስራ አጋሮችዎ ለመስራት በጥሩ መንፈስ ይንቀሳቀሳሉ(በጋራ የመስራት ባህል አሎት)?					
13	ፋብሪካዎ በተከታታይነት የሰራተኞች ስልጠና ፕሮግራም በካይዘን ላይ ተደራሽ ያደርጋል ብለው ያምናሉ?					
14	በስራ ቦታው ላይ የሰራተኞቹ በካይዘን ፕሮግራም ተሳታፊነትን እንዴት ይገልፁታል?					
15	በስራ ቦታው ላይ የሰራተኞች በካይዘን የውሳኔ አሰጣጥ ላይ ያላቸው ተሳትፎ እንዴት ይገለጻል?					
16	የካይዘን ተግባራዊነት ከብደት እና ቅለት እንዲሁም ውጤቱን ሪፖርት የማድረግ ሂደት እንዴት ይገለጻል?					
17	በድርጅት ውስጥ የታወቀ ለስልጠና እና ትምህርት የተዘረጋ ስርዓት አለ					
18	የካይዘን ትግበራ እና ስልጠናዎች በከፍተኛ ሁኔታ አጥጋቢነት ባለው ፋብሪካው ያዘጋጃል					
19	የሰራተኛ ተነሳሽነት እጥረት ለካይዘን ትግበራ ተግዳሮት ፈጥሯል					
20	ፋብሪካው የሰራተኞችን ሙያ መፍጠር አስችሏል					

21	የበላይ አመራር ቁርጠኝነት፣ ባለ-ሰዓት አመራር እና ድጋፍ ደካማ ነው።					
22	ካይዘን በሚተገበርበት ወቅት ተሳታፊ ስለሆንኩ እርካታ ይሰማኛል ብለው ያምናሉ					
23	ከካይዘን አስተባባሪዎች ጋር የመገናኛ ጊዜ በቂ አይደለም ብለው ያምናሉ					
24	ችግሮችን ከስር ከመሰረቱ ለማወቅ እና ለመፍታት በግሩፕ መሆን ጠሩነው ብለው ያምናሉ					

ለትብብር አመሰግናለሁ

በካይዘን ላይ ሀሳብ እና አስተያየት ካለዎት ከጀርባ ባለው ክፍት ቦታ ላይ ይግለጹላ።

QUATERNARIES FOR MANAGERS

Part I Demographic information

1. Gender : Male Female
2. Age 18-25 26-35 35-50 above 50
3. Your work position _____
4. Your kaizen position _____
5. Number of employee engaged in your department _____

Part II please gives your answer for the given question

6. Do you and your company implement kaizen?
 - A. Yes
 - B. No

If your answer is yes, please justify what type of kaizen tool you implemented

7. What type of outside assistance did you required for kaizen implementation?

8. What were the biggest challenges during kaizen implementation in your company and how did you overcome the challenge?

9. What are the achievements of kaizen implementation in employee attitude and productivity improvement?

10. What were the biggest successes and opportunities your companies have during kaizen implementation?

11. What types of **Measurable Results** have you achieved during kaizen implementation?

12. What types of **Non-Measurable Results** have you achieved during kaizen implementation?

13. What type of opportunities the organization has been used to sustain the kaizen practices.

Part III please make mark your response the best statement describe by the listed mark

- Strongly agree - 5
- Agree – 4
- Neutral - 3
- Disagree – 2
- Strongly disagree - 1

No	Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
14	Kaizen provides opportunity to participation in decision making					
15	Kaizen improved, process cycle time & through put time, on time delivery, visual management and floor space usage					
16	Overall, Kaizen technique increased knowledge and skills of employees attitude on continuous improvement					
17	Kaizen enhances employee’s ability to measure effect of change in the work area					
18	Kaizen implementation brought quality products and services in terms of efficiency, effectiveness and transparency					
19	Kaizen has been creating organizational attitudes and values for change					
20	There is an established system for training and education in the organization to encourage the required values of Kaizen processes					
21	The kaizen technique increased employees/ team members interest (voluntarily) in the work area and perform better work					

22	Co-workers are very supportive in nature and Employees co-ordinate in all aspects to participate					
23	Do you believe Employees /team members communicate new ideas as a result of Kaizen?					
24	Fighting to change and solving the root cause problem are challenges for Kaizen implementation					
25	All the corporation management and worker believe that kaizen is necessary to improve the work place					
26	In kaizen practices and implementation program all the cooperation employees are involved					

Thank you for your participation

If you have any suggestion or comment regarding with kaizen practice please write on back of this page