The Achievements and Challenges of kaizen theory Implementation The Case of Sino Ethiop

BY

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Declaration

This is to certify that this thesis entitled “The implementation of Kaizen theory :Achievements and Challenges The Case of Sino Ethiop and Awash Tannery through 5S and muda identification and elimination. In the two companies’ submitted in partial fulfillment of the requirements for the award of the degree of M.A. in Public Administration and Policy in Addis Ababa University., done by Alebel Girma under my guidance. To the best of my knowledge and belief the work contained in this thesis has not been previously submitted for a degree or diploma at any other higher education institutions.

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Dedication

This thesis is dedicated to my son and daughters; Emmanuel, Debora and Saron Alebel whose love made me energetic and powerful encouragement have always been with me and which played a key role in guiding my life in general and in the successful completion of this work in particular.

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Alebel Girma

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Lists of abbreviations/Acronyms

BPR Business processing reengineering

BSC Balanced Scored Card

EHGCs Ethiop Associate Africa is an Empty Hard Gelatin Capsules

EKI Ethiopian Kaizen Institute

ELICO Ethio Leather Industries Plc

FDI Foreign Direct Investment

GDP Gross Domestic Product

GRIPS National Graduate Institute for Policy Studies

GTP Growth and Transformation Plan

ISO International Organization Standardization

JICA Japan International Cooperation Agency

JIT Just- in –Time

KPT Kaizen Promotion Team

OJT On Job Training

PDCA/SDCA Plan Do Check Act / Standardize Do Check Act

QCC Quality Control Circle

QCD Quality Cost Delivery

SDCA Standardize-Do-Check-Act

SOP Standardized Operation Procedure

SPSS Statistical Package for Social Sciences

TICAD Tokyo International Conference for African Development

TPM Total Productive Maintenance

TPS Toyota Production System

TQC Total Quality Control

TQM Total Quality Management

WIP Work In Process

Abstract

Kaizen is originated in Japan in 1950s as one of means that has been used widely in Asia to improve elements associated with the effectiveness of business organizations, with mainly benefits already well documented. The Government of Ethiopia, inspired by the practicality of the Kaizen Policy in the business firms, adopted it as an exemplary approach and tool of growth and development in July 2009. This study attempted to investigate the achievements and pinpoint the challenges of Kaizen theory implementation through basic Kaizen tools like 5s and waste elimination in Sino Ethiop in Addis Ababa. Descriptive and inferential methods were used to gather information about the present conditions in the companies. The purpose of employing this method is to describe the nature of the situation, as it exists at the time of the study and to explore the causes of particular phenomena.In order to achieve the aim of the study, the researcher used non-probability purposive sampling technique to select the managers and simple random sampling for kaizen promotion teams and facilitators and, operational workers. Questionnaire and semi structured interview are used as data collection instruments .through the implementation of kaizen Sino Ethiop Pharmaceutical company.Data collection techniques like site-observation, photographs, questionnaires dissemination, interview, and reviewing literatures were employed. For the statistical analysis, Statistical Package for Social Sciences (SPSS)-Version 20 and Excel Spreadsheet were used. Various aspects of Kaizen implementation impacts in relation to quality and productivity improvements through 5S and waste elimination were assessed by classifying the subject into three categories: Level of implementation, Results/output of implementation and Challenges of implementation process. The result showed that there is a strong significant positive relationship between training and education, kaizen tools, kaizen pillars with kaizen achievements. The kaizen tools were positively and significantly correlated with quality, productivity, and profit. So as to utilize the effective implementation of kaizen the organization should work to train and educate employees about kaizen. It also needs to work to strengthen kaizen tools and kaizen pillars in order to improve the achievements of kaizen implementation.

***Key words**: Kaizen, 5S, Waste, Standardization, Quality, Productivity, Sino Ethiop, EHGCs.*

CHAPTER ONE: INTRODUCTION

1.1. Background of the Study

Working environment today is rapidly changing and is much more affected by turbulence, uncertainty and instability than it was some decades ago. Organizations are confronted with complex situation and in such circumstances have to manage their resources, such as physical, financial, information and human resources (McAdam*et al*., 2000). Increased competition calls for business organizations to device ways of improving their competitiveness in the ever-changing global market. One of the ways that those organizations and firms can improve their competitiveness is by improving effectiveness of their systems.

The Ethiopian economic policies have steadily gotten better in terms of depth, breadth and articulation; policy twinning and policy coordination still remain sketchy. And, yet, Ethiopia is beset by imminent economic challenges that call for extraordinary policy expertise.

We need yardsticks to answer the above question rigorously. The following three yardsticks are helpful to do so: 1) policy expansion; 2) institutional capacity to execute policies; and 3) economic justice. Let's see how Ethiopia's economic policy fares in each of these yardsticks.

First, policy expansion: Ethiopia's economic policies have steadily mutated over time. Ethiopia's main national policy framework is the Agricultural Development Led Industrialization (ADLI). ADLI guides and dictates resource allocation. The second major policy is the industrial policy (IP). Initially, ADLI narrowly promoted only smallholder farmers and the IP promoted only a few export industries – notably, leather, textile, metal, cut-flower, industry and pharmactual Both policies proved difficult to meet the required critical mass to pull Ethiopia out of poverty and set it on a development path.

With the lapse of time, it dawned on Ethiopian policymakers that the policies were narrow. Consequently, in 2005, ADLI broadened its policy scope by adding large-scale commercial farming to its policy menu. And, later (in 2009), the IP expanded to include not only export-industries but also import-substituting industries. Now, both the ADLI and the IP are much better in terms of depth, breadth and articulation.

The second yardstick: Ethiopia's institutional capacity to execute its policies? At national level, the ministries and agencies implement the policies and monitor their progress. In some cases, policies fail. The main reason is: either the policies couldn't be translated into concrete actions or the implementing agencies are not competent or both. In a bid to alleviate colossal policy failures and promote priority sectors, Ethiopia has set up specialized and technocratic institutes: the Leather and Leather Products Technology Institute, Metal Products Development Center, Ethiopian Textile Industry Development Institute, Agricultural Transformation Agency and Ethiopian Kaizen Institute. Though the institutional capacity of the policy-implementing agencies and the technocratic support of the Institutes are crucial; they however corrosively lack policy twinning and policy coordination among themselves. For example, the Ministry of Industry renders policy support to the leather sector and pharmaceutical to produce quality leather product and Empty Hard Gelatine Capsule products But, producing quality leather products requires quality hides and skins, which is taken care of by the Ministry of Agriculture. For the leather sector to realize its potential, both ministries must coordinate and twin their policy actions.

The third yardstick is economic justice. We measure the economic justice of policies by how inclusive and pro-poor they are. Using these yardsticks, we poor they are. Using these yardsticks, we can easily show that ADLI and Ethiopia's SME policy are highly pro-poor and pro-equitable growth. Ethiopia's burgeoning spending on education, health, housing and roads is unambiguously pro-poor. Plus, Ethiopia devotes 17% of its budget to smallholder (poor) farmers; well above the 10% commitment agreed by African countries. And, the SME policy supports the urban poor by providing them with skills

training, credit and involving them in urban projects such as housing and cobble stoning. Likewise, Ethiopia's economic policies favor equitable growth as is shown by its 0.298 Gini-coefficient, which is one of the lowest in the world.

The economic growth Ethiopia has witnessed for the last couple of years is largely public investment driven. This fact raises the question of growth sustainability. The main challenge is, thus, how to sustain the current growth momentum. Unless the private sector is proudly on the driver's seat, growth may slow down and finally stagnate at a low level.

It goes without saying that sustaining robust growth lies in building a strong private sector; and to the extent that manufacturers are stuck in low-quality and low-productivity because of lack of improved business skills; institutionalizing Kaizen is among the main solutions. And, let's be clear that success will depend not on establishing Kaizen Institute, but on how robustly the Kaizen Institute does its mandated job and the 'national movement.

The Government of Ethiopia, inspired by the practicality of the Kaizen Policy in the business firms, adopted it as an exemplary approach and tool of growth and development in July 2009. Through the initiation of a Bilateral Policy Dialogue between the Japanese Government and the Ethiopian Government undertaken in 2009, a preparation was made for the implementation of the Policy at a pilot project level. After the Ethiopian Government had prepared itself for two years, the Ethiopian Kaizen Institute was established in 2011. The Institute thus chose a total of 30 companies (i.e., 10 from Metal, 6 from Agro-processing, 6 from Chemicals, 4 from Leather, and 4 from Textile Companies) to serve as its Pilot Kaizen Projects. Then the Institute evaluated those Pilot Companies and awarded them for good, best and excellent statuses for ten, five and three Companies, in increasing order of success respectively (EKI, 2011).However, the industrial sector in many developing countries, especially in Sub-Saharan Africa, is trapped in low-productivity level. At present, there is a substantial competitiveness gap between the industrial sectors of the advanced and developing economies. And the low-

productivity trap marring the sub-Saharan manufacturers is difficult to break without imparting new knowledge of productivity/quality techniques – one being Kaizen.

Kaizen has already spread to many parts of the world, especially in Southeast Asia and India. Recently countries in Latin America and Africa are adopting it. Kaizen helped countries achieve substantial industrial competitiveness in the global market (e.g. Singapore, Brazil and Tunisia to name a few). Before embarking on full-scale dissemination, experimentation with a small number of pilot business firms is advisable; and then, expansion needs to take place after measuring the gains/benefits of the pilot firms. Following this tradition, Ethiopia is implementing Kaizen pilot project with the help of Japan in selected manufacturing firms in Addis Ababa and vicinities. The results of the pilot business firms must be visible to managers and workers of the industrial sector for effective nation-wide application to take place.

Beyond introducing the Kaizen approach to its manufacturing sector, Ethiopia is setting up Kaizen Institute that will help entrepreneurs acquire various business skills (management techniques, productivity enhancements and quality control practices). This is good news for Ethiopia's private sector that has stagnated for long and has only minimal contribution to the Ethiopian economy. However, this isn't all the government can do. There are two more important tasks the government can do to make the introduction of Kaizen a success: promotion and subsidization. It is quite necessary that the state make and help business firms understand the importance of Kaizen. This will require rallying a momentum of national movement on quality and productivity by creating awareness nationwide; just similar to the concepts of "Korea's Saemaul Undong movement" in the 1980s and the "Japan's quality and productivity movement" in the 1950s, which helped both countries immensely. The second task the government can do is to subsidize the implementation of Kaizen and reward best quality/productivity performers. Business firms' expectations may be lower compared to the cost of adoption; so the government needs to subsidize such efforts until the fruits of Kaizen start to induce

firms to implement it without any help. Rewarding best quality/productivity performers will also help in such efforts.

At this point, it might be alluring to ask why Japanese Kaizen? The success story of Japanese manufacturing sector tells us that Kaizen was a practical solution to the common problems (e.g. low-productivity, high quality-defect rates, waste, etc) that we see in today's developing countries. Kaizen has two good qualities that make it preferable especially in developing countries: first, it directly impacts workers and managers by making them more productive; and hence makes business enterprises several times more competitive. Second, it is a low-cost approach that doesn't require huge capital investment. In the 1970s, the U.S. and some European countries already adopted the successful distinctive set of Japanese management practices - like problem-solving teams, Toyota's lean manufacturing method - to their auto industries.

Sino-Ethiop Associate Africa is an Empty Hard Gelatin Capsules (EHGCs) production plant producing EHGCs for use by the different pharmaceutical formulation factories in Ethiopia, African and few Middle East countries. The company has currently five automatic capsule making production lines to produce EHGCs with a total capacity of 2.4 billion capsules per year. Its capacity utilization is normally more than 95%. The company is working based on three-shift system with 8 hours each. The continuous batch system is applied for the production process; as a result, production of capsules is not interrupted except during regular preventive maintenance schedule and size part changes (www.sinoethiop.com).

The establishment of KAIZEN as standards of attitude and behaviors in the workplace will reduce variability in quality, output, cost, and delivery and increase safety in the workshops not directly accepted as standards are established. However, the workshop may encounter abnormalities, such as defects, delays, machine breakdowns, and injuries. The responsibility of management is to take temporary countermeasures on the spot, find the root cause, and establish a new procedure that prevents the recurrence of the same

problem. Thus, this research aims to explore the achievements of kaizen theory implementation in Sino Ethiop Pharmaceutical Factory and pinpoints the challenges associated with its operation and show how important the fullest possible participation of stakeholders like governmental bodies that contribute for its effectiveness. Moreover, it attempts to assess the extent to which the application and implementation of Kaizen has effectively aligned and harmonized with the implementation of the other management tools, like BPR and BSC.

1.2. Statement of the Problem

With the changing world and emerging new technology that is available and environment of increasing in competition locally and globally, organizations must become more adaptable, resilient, agile, and customer-focused. Managers need to be aware of the technology that will increase effectiveness and improve efficiency in their organizations. Despite their many contributions, the full potential of manufacturing sectors has yet to be tapped due to existence of a number of the constraints hampering their development. Low levels of productivity, high production costs, insufficient quality, and poor safety are among the prominent hampering factors and internal challenges limiting performance of manufacturing sectors in organization. While their low performance is persistently attributed to the unfavorable circumstances surrounding them, the impact of constraints related to the Manufacturing sectors themselves cannot be underestimated. Hence, adopting a system that would triumph over such challenges is imperative.

Past studies have signified that despite the benefits of kaizen, there were many companies failed to achieve the success of the activity in their organizations. This is because of the internal constraints that impede the effectiveness of the implementation against the expected outcome of the activity. Accordingly, the study by Jaca et al. (2010) as cited by García et al. (2013), discovered that two main barriers that hinder the effectiveness of the kaizen activities in Spain and Mexico are poor cooperation among employees and management and also the defiance of employees towards the changes in the working

system. On similar note, Suárez, B and Ramis, P. (2010) reported that the failures to achieve the objective of kaizen activity among Mexican industries are the employee resistance to change and no appropriate execution and monitoring of the kaizen project. Nevertheless, these factors are not applicable to all countries due to the fact that each particular nation may have different culture, education and knowledge in adopting the kaizen philosophy.

In Ethiopia, so far, there have been limited and inconclusive studies conducted on the implementation of Kaizen in business organizations at different levels. Nesra (2012), for example, conducted a quantitative study on the role of the Ethiopian Government in implementing Kaizen as a modern management tool for quality and productivity at Kadisco Chemical Industry in Addis Ababa. The findings of her study indicated that the implementation of the Kaizen policy was found to increase labor productivity by reducing, on average by 50%, time wastage for searching tools; improved a defect ratio which ranged from 50% to 70%; and improved lead time in the range of 16% to 90%. The researcher thus concludes that the implementation of Kaizen at Kadisco Industry has brought those benefits.However , the previous researches did not give priority over other problems that had been around every corner of the manufacturing sector relatively as aim of kaizen theories. Therefore, this study differ from the previous studys mainly it assessed Consequently, such a failure in implementing the kaizen theory based on the industry development strategy direction may end up w supporting organizations to address their problems and challenges.

Accordingly, scholars in the area have been arguing that proper understanding of policy instruments, methods, culture, principles, and application techniques of the kaizen philosophy would be one essential step towards addressing and solving the currently existing problems and challenges. In this respect, this study has attempted to address those issues not examined previously in the mentioned company.

1.3. Research Questions

1. What is the role of 5S tools of kaizen theory in improving the quality and productivity of the organization?
2. What are the strong area and areas that needs improvement related to 5S implementation in the selected industry?
3. To what extent the current practices of total quality and management are supporting the organization in providing the highest quality of production in the selected industry?
4. To what extent the muda elimination tools of kaizen impact the organization performance.
5. What are the main success and failure factor associated with muda elimination tool of kaizen in the organization?
6. To what extent the application of quality control circle of kaizen significantly produce effective and highest quality of production within an organization?
7. What are the challenges of adopting, implementing and practicing Kaizen theory that hindered the achievement of its predetermined objective?

1.4. Objectives of the Study

1.4.1. General Objective

The general objective of the study is to investigate the achievements and pinpoint the challenges associated with kaizen theory implementation in Sino Ethiopia Pharmaceutical.

1.4.2. Specific Objectives

In order to address the research questions, the specific objectives are:

1. To examine the role of 5S tools of kaizen theory in improving the quality and productivity of the organization.
2. To assess strong area and areas that needs improvement related to 5S implementation in the selected industry.
3. To assess the current practices of total quality and management are supporting the organization in providing the highest quality of production in the selected industry.
4. To examine muda elimination tools of kaizen impact on the organization's performance.
5. To assess the main success and failure factor associated with muda elimination tool of kaizen in the organization.
6. To examine the application of quality control circle of kaizen significantly produce effective and highest quality of production within an organization
7. To pinpoint problems, gaps and failings in the implementation of Kaizen theory and see areas that hindered achievement of its predetermined objective and activities.

1.5. Scope of the Study

The scope of the study is limited to the area of kaizen theory tools such as total quality management (TQM), 5S, muda elimination, and quality control circle (QCC), achievements and identifying challenges organizations have been faced during practicing kaizen. The study was take place in Addis Ababa in selected manufacturing industry called Sino Ethiopia pharmaceutical factory.

1.6. Limitation of the Study

Due to time and other resources limitations, the research focused on specific manufacturing sector and it did not include other manufacturing and service giving business. Though the study has exerted efforts to make proper utilization of the allocated budget and time in order to meet the set of objectives, it could still have made a more intensive and comprehensive investigation provided it had more budget and time.

1.7. Significance of the Study

Study such as business management, entrepreneurship, vocational and technical education. Thus, the findings of this study can contribute in pinpointing the challenges and achievements associated with kaizen implementation theory in the manufacture sector in bring about positive outcomes such as encourage employee involvement, promote This study has an importance to business policy makers, practitioners, relevant fields of organizational productivity, and consider distributing monetary or tangible benefits after solutions from Kaizen activities are implemented, and decrease hazardous situations and unsafe working conditions. Specifically, the findings of the study should have the following contributions:

- The empirical evidence may help them to fill an information gap among manufacture sector including ministry of industry.
- The research results help all stakeholders within the manufacture sector mainly researchers, educators and implementers to improve the current practices of the Kaizen implementation.
- Finally, based on the conclusions drawn in this research, scholars from different fields of study may use them as a stepping stone for further studies.
- Theoretical contribution may help them to understand the kaizen philosophy, characteristics, behavior and insight.

1.8. Organization of the Study

This research thesis is organized into five Chapters. Chapter one which is the introduction to the study includes background to the study, statement of the problem, research questions, objectives of the study, significant of the study, delimitation of the study, limitations of the study, and the organization of the thesis. Chapter two is presents on review of related literature enclosed in Kaizen. It also dwells on both models used to implement Kaizen, conceptual/theoretical literature elsewhere in the world in the light of the objectives and the nature of variables considered in the study. The third chapter describes the research design and methodology, target population and sampling, data collection instruments, methods of data analysis an ethical concerns considered in the study. Chapter four is presents data analysis, interpretation and discussion. The last chapter describes recommendation and conclusion.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

This chapter focused on the theoretical and empirical reviews of kaizen concepts and its contributions in the process of enlightening the organizations through its various Kaizen pillars and tools. The review was guided by the objectives of the study.

2.2. Historical Overview and Definitions of Kaizen

The ideas of kaizen philosophy is implemented as a continuous improvement of organizational attitude on the purpose of doing business. It is the key thrust to maintaining or achieving competitive advantage through a well-managed, dynamic change process. It is customer focused, ever changing, and maximized when all associates use Kaizen to achieve the primary quality, cost, delivery, safety, and morale goals. Its assumption lies in the Buddhist understanding of life to be inherently the experience of suffering. According to this school of thought, humans undergo suffering because everything is the result of ever changing and interrelated conditions and causes. Our confusion and suffering will end, when the causes of our suffering are identified and extinguished (Gembutsu, 2008).

“ Kaizen has contributed greatly to Japan’s competitive success (Imai, 1997, p.1). Kaizen is the main pillar to TPM (Total Productive Maintenance), and its emphasis lies with continuous process improvement. The most effective way to achieve Kaizen is for workers themselves to be highly motivated to implement production methods and products. Suggestion systems, QC circle, and self-management are typical methods to motivate workers to achieve Kaizen (Ethiopian Kaizen Institute, 2013).

Kaizen is a Japanese word that has become common in many Western companies. Kaizen culture an organizational culture based on the three super ordinate principles namely

process and results, systemic thinking, nonjudgmental and non-blaming (Mullins, 2010). The word indicates a process of continuous improvement of the standard way of work. It is a compound word involving two concepts: Kai (mean change) and Zen (mean for the better).

2.3. Objectives of Kaizen

The benefits of kaizen include increasing number of private enterprises and implement quality and productivity improvement. The success of the kaizen implementation also established to disseminate kaizen to private enterprise in sustainable manner (EKI and JICA, 2013). Kaizen aims for improvements in productivity, effectiveness, safety, and waste reduction. Those who follow the approach often find a whole lot more in return: less waste – inventory is used more efficiently as are employee skills; people are more satisfied – they have a direct impact on the way things are done; Improved commitment – team members have more of a stake (a share or interest in business) in their job.

The objective of Kaizen is to create a workplace with energy and vitality, which respects people, provides them with the will to strive, and by doing this, enhance their feeling of self-worth. Awareness training sessions for all employees are important aim. To further encourage employee involvement, promote specific Kaizen activities, and consider distributing monetary or tangible benefits after solutions from Kaizen activities are implemented. Focused training of associates is required for understanding what is – and is not – the essence of Kaizen. Kaizen in an organizational vision context, which needs to be followed thoroughly in order to achieve desired business objectives. They also must be taught about the necessity of impartial evaluation and strategy for improving participation. Kaizen has an objectives of long-term implication, widespread application, alignment with organizational objectives and planning objectives.

The objective of kaizen is more inclined to commit to doing a good job. Improved retention – satisfied and engaged people are more likely to stay; Improved

competitiveness – increases efficiency tend to contribute to lower costs and higher quality products; Improved consumer satisfaction – coming from higher quality products with fewer faults; Improved problem solving – looking at processes from a solutions perspective allows employees to solve problems continuously; Improved teams – working together to solve problems helps build and strengthen existing teams.

2.4. Systems and Techniques of Implementation of Kaizen

Indeed an integral part of Kaizen is Total Quality Management (TQM). Therefore the term is reciprocally related. When an organization/company want to maintain a level of quality that satisfy their customers at the appropriate time and price then that organization must follow some quality management techniques to fulfill those principles and planning.

According to Imai (1986), the techniques associated with Kaizen included, total quality control (TQC)/TQM, just in time (JIT), total productivity maintenance (TPM), five's" (5s), Benchmarking, skill gap analysis, six sigma the information about it found under TQM, Policy Deployment, a Suggestion System, Small-group activity, etc. For this research only use some of them than all organizational performance and effectiveness. Other continuous improvement methods such as Six Sigma, Lean, and Total Quality Management are also recommended in the implementation of KAIZEN (Izumi et al, 2009).

2.4.1. Teamwork

KAIZEN calls for continuous improvement that involves everyone in the organization from top management to bottom. Teamwork is an aspect that is paramount to fulfilling the functions of KAIZEN (Yokozawa, et al, 2010). Thus, the KAIZEN operating system allows employee participation and the delegation of responsibility. The KAIZEN organizational structure is characterized by open lines of communication, transparency, consultative-decision making, and sharing of responsibility by employees at all levels.

2.4.2. Suggestion system

A Suggestion System is the method by which the ideas and suggestions of employees are communicated upwards through the management hierarchy to achieve cost savings or improve product quality, workplace efficiency, customer service, or working conditions (Izumi et al, 2009). In most cases these are not ideas for major changes. Suggestions are not limited to a specific area such as production or marketing. KAIZEN is based on making changes anywhere that improvements can be made. KAIZEN focuses on making improvements in any area where there is a scope for improvement. The management of the company encourages suggestion or KAIZENs from employees regarding possible improvements in their respective work areas.

2.4.3. Process orientation

Improvements through KAIZEN have a process focus. KAIZEN fosters process oriented thinking because processes must be improved for results to improve. Failure to achieve planned results indicates a failure in the process. Management must identify and correct such process- based errors. KAIZEN strategies have failed in many companies simply because they ignored process (Imai, 1986). Joseph M. Juran () pointed out that the source of most problems is in the process we use to do our work. He discovered the “85/15 rule,” which states that 85% of the problems are in the process and the remaining 15% are due to the people who operate the process (Hoerl&Snee, 2012). Rather than identifying employees as the problem, KAIZEN Emphasizes that the process is the target and employees can provide improvements by understanding how their jobs fit into the process and changing it.

2.4.4. Kaizen and Employee Involvement

Employee involvement is a process for empowering employees to participate in managerial decision-making and improvement activities appropriate to their levels in the

organization. According to Chapman (2005), employee engagement can increase the understanding of organizational policies. It involves processes such as lower levels of decision making, adopt the experience, knowledge and the ideas for the advancement of the organization. Employees shall be given due recognition for their contributions and their ideas. It is a psychological process to develop confidence between the members of the organization and encourage them to make decisions and solve problems with each other.

2.4.5. Kaizen and Training

Norhayati et al. (2012), Baldrige Award winners place a great deal of emphasis on training and support it with appropriate provision of resources. Motorola allocates 2.5 % of payroll costs or $120 million annually to training 40% of which goes to quality training. Training is an important factor that helps in making efforts toward quality improvement. Quality training includes educating and training all employees, help employees to increase knowledge, provide information about the mission, vision, direction and organization structure to enable them to gain skills in an effort to improve the quality and thus solve the problem.

It is often said that managers have a better view of matters than their workers because they are more informed, have broader skills and are exposed to a wider range of work environments and situations (ILO, 1998). If workers are given the necessary information and training, they might be able to reach similar conclusions to the managers, thereby freeing managers' time for strategic aspects of the business. Providing training should make workers more aware of hazards at the workplace and enhance their capacity to effectively contribute to the reduction or elimination of such hazards. Working conditions and productivity within your enterprise will certainly improve as a consequence of their contribution.

According to Toshihiko H. and Wimal K. (2011), the training on Kaizen requires not only On the Job Training (OJT) but also formal training. The details of problem solving method have to be learnt particularly by the middle managers, which should be facilitators in detecting problems and the solution measures through team approach followed by each work unit. Various techniques to assess, to measure and to monitor the problem and to gather information related to the problem solving process are all to be acquired both in OJT and the formal training. Leadership and the creating positive mind set are other important interpersonal skills for the middle managers.

In manufacturing industries employees should be trained such that they can analyze the root cause of the problem. General know how of the problem is not sufficient rather they should be able to know why the problem is occurring and how to eliminate it. For this employee need continuous training, ultimately; the entire employee should be multi-skilled and should solve the problem in their area by themselves. flexibility in production is achieved by reduced WIP and multi-skilled operators, who can work on multiple styles immediately (Naresh, 2011).

2.5. Elimination of Wastes and Loses

KAIZEN focuses on eliminating wastes (Muda) and loses from the processes. KAIZEN is not about eliminating people. Waste is any non-value adding procedure, item, or activity but consumes resources. Womack et al (2003) define waste as any activity that creates or adds no value to the process as defined by the ultimate customer. Examples of wastes include defects, idle time of employees/equipment, mistakes/interruptions, extra steps, material supply in excess, overproduction, unnecessary movements, waiting, unnecessary processes, delays etc.

Figure 2.1. Types of Wastes (Source: Eugerio L. 2012)

Overproduction /Making to Much

Ties up capital, diverts production from customer requirements, loss of inventories

Transporting/ Moving Things

Unnecessarily increasing production time, extra WIP

Unnecessary Stock/ Inventory

Ties up capital, risk of changes

Waiting

Decreasing productivity, wastes personnel resource

Unnecessary Motion

Increase production time, unnecessary operator motion

Processing

Poorly designed/ incapable process

Defects

Scrap, reworks, returns

2.6. 5S-KAIZEN

5S-KAIZEN is a methodology of managing a workplace or workflow with the intention of improving efficiency, eliminating waste, and increasing process consistency. It derives its name from the use of five Japanese words beginning with the letter S as the cornerstones of this philosophy. These words are: "Seiri" meaning Sort, "Seiton" meaning Set in Order, "Seiso" which implies Shining or Cleanliness, "Seiketsu" which means Standardize, and "Shitsuke" which implies Sustaining. For the sake of consistency these words, all starting with the letter S have been transliterated in Swahili as “Sasambua”, “Seti”, “Safisha” “Sanifisha” and “Shikilia” respectively (Imai, 1986).

1. ***Seiri (Sort).*** The first step of 5S is to differentiate between what you need and what you don't. What is essential and what is not. To do that effectively, you need to eliminate unneeded materials, tools or equipment from the work place.
2. ***Seiton (Set in Order).*** Once sorting has taken place, efficient storage methods must be enacted so that items are easy to locate and use, as well as put away (Hough, 2008). The logic behind this stage is that everything that is needed to do a job should be placed where it can be easily accessed (Howell, 2009). Every tool, every Standard Operational Procedure (SOP) and Material Safety Data Sheet (MSDS) manual must be designated a place where it can be found easily when needed.
3. ***Seiso (Scrub or Shine).*** This phase assumes that everything unneeded is thrown away or disposed and all the tools now available are organized for efficient use (Howell, 2009). This phase means thoroughly clean up clutter, fixes things (Hough, 2008) and involves checking and inspection of everything to not only clean up the work place but also to eliminate the root cause of that problem (Van Patten, 2006). Some 5S projects put more emphasis on cleaning, and in the process useful information can be lost in the sweeping. Thus it is imperative that the cleaning process is done not by an outside contractor but by the team members

who are focused on interpreting information that the cleaning process is generating.

4. ***Seiketsu (Standardize).*** Standardizing involves working with the team in such a way that the team members without exception agree to implement the new way of working as the normal way of working (Van Patten, 2006). It is important that gains made by the first three phases are not lost by allowing the procedures from breaking down (Howell, 2008). This can be used to reinforce procedures or practices that will be key in driving improvements in the future.

5. ***Shitsuke (Sustain).***Most studies (Bullington, 2003, Cooper *et al.,* 2007; Hough, 2008; Howell, 2009;Van Patten, 2006) identify the fifth phase as the most difficult phase to be executed in the process. It is important not to go back to the comfort of old methods of doing things (Hough, 2008).

Figure 2.2. 5S Kaizen (Source: Eugerio L. 2012)

2.7. Quality Control Circle

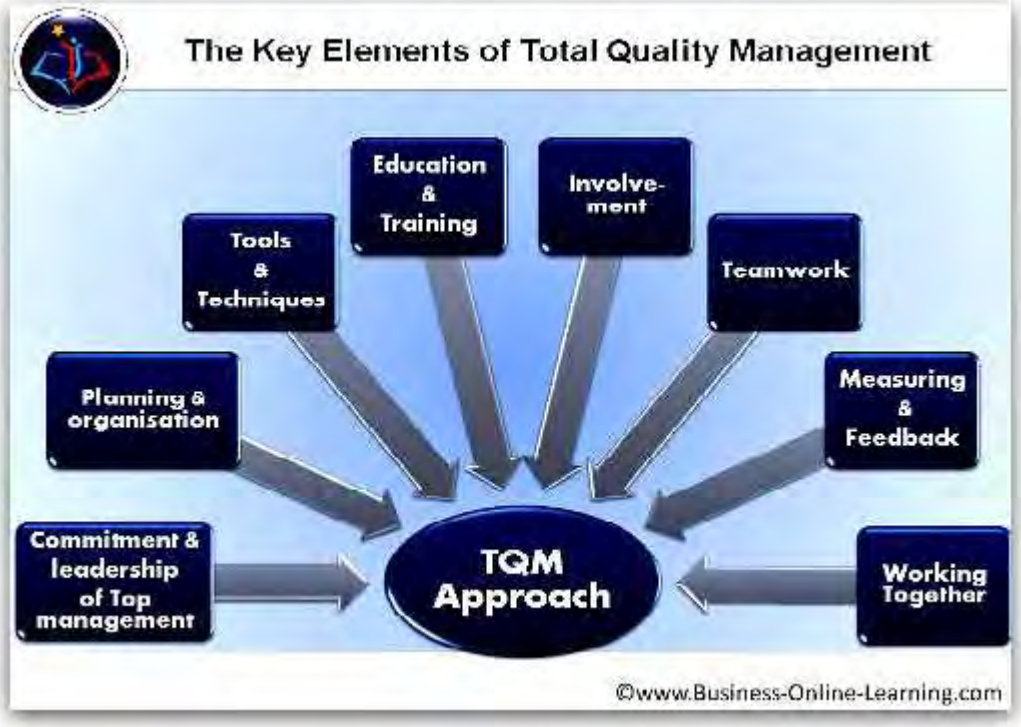
A Quality Control Circle (QCC) is a small group of formed based on genuine participation of front-line employees, who continually control and improve the quality of their work, products and services. QCC activities pursue continuous improvements in the workplace with self-disciplined and humanity-focused approaches, utilizing scientific techniques. QCC need to be supported by the top management and the middle managers who treat QCC activities as an important part of employee development and workplace utilization, and provide guidance and support for genuine participation while respecting the humanity of all employees, Kaizen Manual (2011).

Thessaloniki (2006), describes quality circle is a group of staff who meet regularly to discuss quality related work problems so that they may examine and generate solutions to these. The circle is empowered to promote and bring the quality improvements through to fruition. Thus the adoption of quality circles (quality improvement team) has a social focus. There must be commitment from senior management, unit management and supervision, other staff and of course the circle members.

From the definition of Kaizen provided by Imai (1986), QCC is the vehicle, which could call intention and participation from all levels of employees from top managements, managers, supervisors, to shop- floor workers. The Kaizen concept utilizes the cooperative features of the QCC to collect suggestions on the work process.

2.8. Total Quality Management

Total Quality Management (TQM) is a comprehensive and structured approach to organizational management that seeks to improve the quality of products and services through ongoing refinements in response to continuous feedback.Total Quality is a description of the culture, attitude and organization of a company that strives to provide customers with products and services that satisfy their needs. The culture requires quality


The Key Elements of Total Quality Management
Education & Training
Involve-ment
Tools & Techniques
Teamwork
Planning & organisation
Measuring & Feedback
Commitment & leadership of Top management
TQM Approach
Working Together
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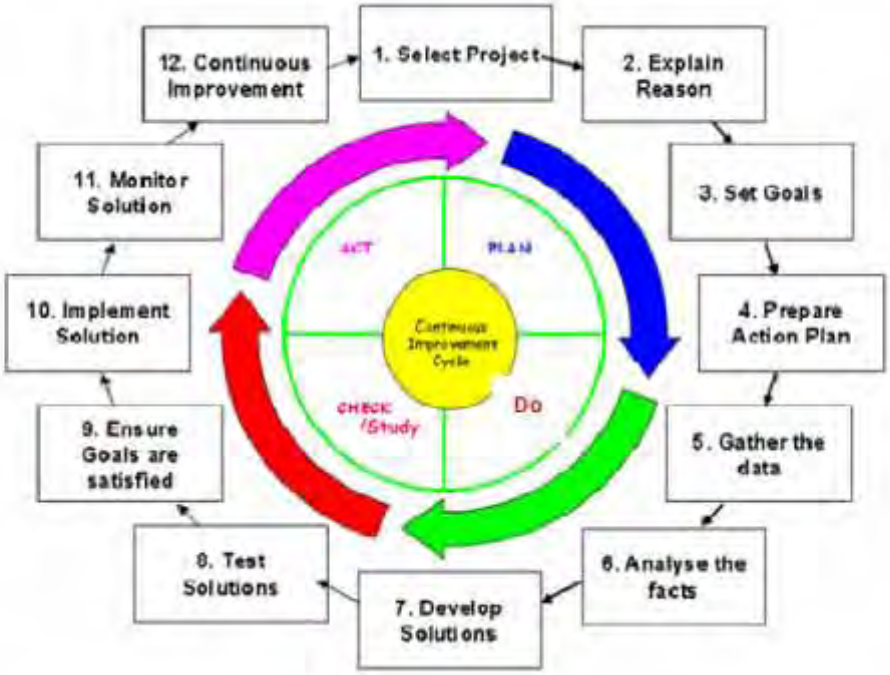

1. Select Project
2. Explain Reason
3. Set Goals
4. Prepare Action Plan
5. Gather the data
6. Analyse the facts
7. Develop Solutions
8. Test Solutions
9. Ensure Goals are satisfied
10. Implement Solution
11. Monitor Solution
12. Continuous Improvement
ACT
PLAN
Continuous Improvement Cycle
CHECK /Study
Do

resulted in dramatic gains in productivity, enriched jobs and increased motivation. However, the employees must receive adequate training and support to ensure the successful of the kaizen activities, Marksberry et al., (2010).

According to Imai (1986), in the 1970s, as the Kaizen Japanese management system revealed a potential for never-ending efforts for improvement in production values, it diffused its new management system throughout Japanese companies. With the globalization of Japanese businesses in the 1980s, Kaizen became a global activity. Kaizen "…was originally developed in Toyota and spread among other Japanese manufacturers as they gained fame in the international market for higher quality products.

According to Asayehegn (2011), the Japanese management system as practiced in a number of countries has been seen positively by many managers and practitioners because the system has helped a number of enterprises to become productive, competitive, and has largely increased customer satisfaction. In fact, Yokosuka et.al.(2010), argue that "…two national characteristics are critical for successful Kaizen transfer. One is the disciplined people who follow what they are asked to do i.e. keeping the deadline, quality control, and following standard operating procedure. The other is a hungry mentality, eager to do work which is above and beyond their responsibility.

Toyota Production System was successfully built up using Kaizen Philosophies lasting for decades until today. The reason for this sustained success is that everybody in the company, starting from top management down to the workers, is committed. In this article I wish to advise that Kaizen, when applied under firm top management commitment, can be turned into a corporate strategy to make an organization far more competitive and profitable, given today's global business environment, Imai (1986).

As it is confirmed by Ravikumar et.al.(2011), though many literatures on lean implementation are comprehensively available, industry. The pressure placed on firms in the manufacturing industry from international competition has been enormous. The

increase in competition has led to an increased focus on customer satisfaction as a survival of the company in the long run". The manufacturing industry has opportunities to improve, but requires some changes. Under the highly competitive environment, the manufacturing industry has numerous opportunities for improvement using lean principles. Lean practices can fulfil the customer demands with high quality and services at right time.

The basic idea behind Kaizen, continuous improvement, is to eliminate all types of wastes, which does not add value to the end product. Any manufacturing such as Capsule manufacturing industry can maximize their profit margin by reducing all types of wastes. Kaizen is one of those activities that focus on cost reduction by eliminating non-value added activities. In Today's competitive world, the most important driver for success is time; the company that delivers goods with a shorter lead time is the market winner. Financial growth of any company also depends upon productivity improvement and waste minimization. Waste and productivity are the two major issues in the sector. Therefore manufacturing industries so as to increase their productivity and increase their competitiveness they have to focus on waste identification and elimination process.

As it is stated by Imai (1997), one of the most urgent and important tasks for organizations including public offices and private organizations (both manufacturing and service sectors) is a strategy to make a radical transformation and meet the challenges of globalization and IT revolution. Kaizen applied as a strategy involves everyone, every function and every level of management on a long-term basis. It is not a flavor of the month. It is not a collection of various small patches of improvements carried out without focus. Kaizen does not mean improvement for improvement's sake. It means improvement tomeet the organizational target. Kaizen is a long-term strategy, for a minimum of three years initially, to be repeated regularly. The strength of Toyota Motor Corporation is that it has been carrying out Kaizen strategies to this day since it was started in the middle of the 20th Century.

Today, the commitment of top management and front line workers to continuous improvement determines the long-term health of any organization. Capsule manufacturing industry are important in economic and social terms, in the short-run by providing incomes, jobs, especially for women, and foreign currency receipts and in the long-run by providing countries the opportunity for sustained economic development. Therefore the industry sector will go steps further in using Kaizen, continuous improvement as a business strategy.

According to Imai (1986, 1997), the implementation of Kaizen strategy is primarily based on a number of guiding principles. The five major principles were particularly highlighted as: First, processes and results: Kaizen strategy depends mainly on human efforts to improve results, and this requires process improvement. A process-oriented approach, referred to as the "plan-do-check-act" (PDCA) cycle is used for process improvement. As the resulting work process, following each cycle of improvement, becomes unstable due to the nature of change, a second cycle is, therefore, required to stabilize it. The second cycle is described as the "standardizing cycle," and referred to as "standardize-do-check-act" (SDCA) cycle. The two cycles –PDCA and SDCA revolve regularly to spread a culture of continuous improvement as a standard practice within an organization. This means an organization should never settle on a status quo.

2.10. Challenges of Kaizen implementation

Imai (1986), argues that creating a corporate atmosphere and corporate culture has been an inseparable part of Kaizen programs. All the Kaizen programs implemented in Japan have had one prerequisites in common: getting workers acceptance and overcoming their resistance to change. Achieving this has necessitated: constant efforts to improve industrial relations, emphasis on training and education of workers, developing informal leaders among the workers, formation of small group activities such as QC circles, support and recognition for worker's Kaizen efforts, conscious efforts for making the workplace where workers can peruse life goals, bringing social life into the workshop as

much as practical, training supervisors so that they can communicate better with workers and can create a more positive personal involvement with workers and bringing discipline to the workshop.

According to EKI (2014), during Kaizen implementation process in manufacturing industries there are some challenges facing in order to have successful results. It emanates from our limited Kaizen knowledge, limited know how of the environment of local companies by Japanese experts and the readiness and commitment by the company side. Moreover, the major challenges in the implementation process are some companies, although they have modern manufacturing machinery and equipment and organizational set up, they are lack of appropriate knowledge and skill how to organize, mobilize and run their company and managing changes, in some companies, the owners are in charge of everything where the management and workers equally receive orders and instructions from one source and any improvement depends on the will of the owners, there are some companies where the owners may not be surprised whether the companies are running at loss or profit with a culture of corporate dependency by which loss makers are subsidized by profitable ones is observed and some huge companies are at risk when measured by any business standards. In addition to these the manufacturing industry is characterized by mix of backward technology to the-state-of-the-art which is considered as one of the implementation challenges.

In relation to human resource also there are challenges in kaizen implementation as some companies are characterized by extreme turnover of management and workers not only due to lack of knowledge and skill, but also factors not related to their efficiency, some are sweating to catch up with neck to neck market competition where the benefits are less rewarding, some companies, the workers are ready to change but the management hesitates and workers are running only after their benefits where their companies are sloppy. Sustaining of the archived results is also a big challenge which means although

improvement efforts have been made in some companies, most of them are retreating, (EKI, 2014).

2.11. Kaizen in Ethiopia

In the 1980s, the manufacturing industry in Japan showed a significant growth through the adoption of the Kaizen process of management. The key elements of the Japanese management system and the Kaizen strategy were embedded to achieve a never-ending journey towards increasing productivity, and efficiency, and to foster the spirit of quality improvement. In order to stay competitive in an increasingly global market place with increasing customer demands, by following Japan's example, a number of Ethiopian-based manufacturing companies are using the Kaizen management approach to lower costs of production, minimize waste, improve productivity, boost quality, and achieve sustainability (Asayehgn*et al*, 2014).

On the Fifth Tokyo International Conference for African Development (TICAD V) conference, held in Japan in 2008, was a landmark to come across Kaizen by our late Prime Minister H.E Meles Zenawi who took no time to understand it and requested Japan Government for support. A quick positive response was followed by designing a capacity building program aimed at proving its transferability and sharing know how. At the outset, Ethiopia has chosen Kaizen as its management philosophy for industrial transformation and human resource development since it is in line with its development approach, policies and strategies. After testing its transferability, it took quick actions to establish the Ethiopian Kaizen Institute as a public organization to play the role of Japanese private consulting companies up until such capacity could be locally established Kaizen Manual, (2014).

Asayehegn,(2011), on May 2008, at the Fourth Tokyo International Conference for African Development (TICAD IV) also known as the Yokohama Action Plan, Japan promised to cooperate in the reinvigoration of Africa's economic growth. Given that

Ethiopia's manufacturing sector was only about 5% of the country's GDP, it showed no hesitation and jumped to take advantage of the Japanese offer help Ethiopia across its industries. Japan's offer proposed techniques that could accelerate and improve the quality and productivity of Ethiopia's manufacturing enterprises. After Japan showed its willingness to help with Ethiopia's industrial development, it gave a seminar in collaboration with the Ethiopian Ministry of Industry for about 300 attendees in Addis Ababa on November 26, 2009. As a result, through the Ethiopian Ministry of Industry, the Japanese International Cooperation Agency (JICA) was mandated to become involved in setting up Kaizen Institute in Ethiopia, and then selecting and training the pilot project companies.

As it is clearly indicated on the GTP I , to create a strong foundation for the industry sector to take-up a leading position in the overall national economy by intensifying sector's contribution to employment generation, import substitution, foreign exchange earnings, industries are receiving special support from the government. Manufacturing companies are the one and take the leading part in this case.

2.11.1.Manufacturing industry in Ethiopia

The manufacturing industry is considered to be one of the first steps into industrialization and give opportunities for employment and increase the possibilities for global trading. According to TIDI (2014), since 2010 the Ethiopian government has put effort to improve, support and expand the manufacturing industry, both in serving the domestic market but mainly with the aim to export and be competitive at the global market. The Ethiopian government has through its agricultural development led an industrialization economic policy where the government has implemented new policies and strategies. One strategy is prioritizing the manufacturing industry, where the choice is made due to rich natural resources, as raw material, power supply, as well as a high population of youth. The manufacturing industry in Ethiopia is expanding rapidly, in 2020 the sector

export grew 28 % and employs over 40 000 people, creating new export opportunities and being key contributor for generating foreign currency.

2.11.2. Roles of Kaizen in Manufacturing Sectors

When we see bureaucratic application of the management system it has perceptual difference between Western nations and Japan regarding job function**.** These includes: Western Approach: Importance to systems and procedures are, through systems in that organizational level and functions are established. Here, the focus is on control i.e. functioning within chance cause variation level. In order to take action when assign causes creep in the context. Thus, in the Japanese perception, one action follows the other in succession (Imai 1986).

1. **Top Management:** They work as a establish kaizen as a corporate policy, and (a) to work out strategies for implementation of kaizen management philosophy in the MSEs; to allocate resources, extend, support guidance and provide according to the came author establish clear policies on kaizen and provide cross functional management goals for achieving kaizen; Evolve systems and organizational structures for promotion of kaizen (Imai, 1986).
2. **Middle Management:** Deploying and implementing Kaizen goals directed by top management. Use kaizen in cross functional management activities; Improving (kaizen) in functional capacity; Maintaining and upgrading existing standards through improvements; providing assistance to workers to develop skills and acquire knowledge on problem solving tools.
3. **Supervisors:** (a.) Follow Kaizen in the functional role, Sustain high morale of workers; keep continuous communication links; assist in kaizen. Involve in and support like QC circles and also suggestion system. Provide assistance and involve workers in kaizen activities (Imai, 1986).
4. **Workers:** Through small group activities and suggestion system involve in kaizen, be disciplined to follow standards. Think of kaizen in day to day

activities. Concentrate on self-development continuously and increase capabilities for problem solving.

2.11.3. Benefits of Kaizen implementation in Ethiopia

The successful results obtained from the first level of Kaizen implementers already started in Ethiopia specially in export industries and some of other manufacturing industries can be explained as there is a movement of self-initiation and ownership feelings among employees, being conscious in producing quality products based on customer requirements, increase in productivity and competitiveness in the world market. In general according to EKI (2015), the manufacturing industries within their one year kaizen implementation in 2014 get remarkable results as big attitudinal change among the top and middle level managements together with employees which influencing them to be less resistant and having " we can do" feelings which in turn became a base for the future improvements, organizing their working places, improving organizational structures, identifying and eliminating wastes, minimizing non value adding activities and by reducing delivery time most of the companies are able to be globally certified, in the companies who are implementing first level Kaizen, by eliminating wastes with an average of 50% there is in millions of Birr cost saving and minimization and enhancing productivity by performing innovations which increasing machine productivity from 25% to 75% . In general productivity increase with an average of 35% and defect rate decrease by 30% together with there is an improvement in quality.

2.12. Empirical Literature

Since late of the 1980s, a larger number of studies, which have focused on different Kaizen systems, approaches and practices such as Japanese manufacturing techniques (Brunet & New, 2003; Schonberger, 1986), the Toyota production system (Liker, 2004; Ohno, 1988), and lean production (Womack et al., 1990) have illustrated the effectiveness of Kaizen. Furthermore, studies of

kaizen activities in the countries outside Japan, such as Australia (Chapman et al., 1997), Sweden (Lindberg & Berger, 1997) and the UK (Oliver & Wilkinson, 1992) suggest that the concept, approaches, and practices of Kaizen have become routinely accepted throughout the world

Watson (1986) says that the origin of Plan-Do-Check-Act (PDCA) cycle or Deming cycle can be traced back to the eminent statistics expert Shewart in the 1920s. Shewart introduced the concept of PDCA. The Total Quality Management (TQM) guru Deming modified the Shewart cycle as: Plan, Do, Study and Act. The Deming cycle is a continuous quality improvement model consisting of a logical sequence of these four repetitive steps for Continuous Improvement and learning. The PDCA cycle is also known as Deming Cycle, the Deming wheel of CI spiral. In 'Plan phase', the objective is to plan for change predict the results. In 'do phase', the plan is executed by taking small steps in controlled circumstances. In 'study/check phase' the results are studied. Finally in 'act phase', the organization takes action to improve the process..

Bassant and Caffyn (1994) define the Continuous Improvement (CI) concept as 'an organization-wide process of focused and sustained incremental innovation'. Many tools and techniques are developed to support these processes of incremental innovation. The difficulty is the consistent application of CI philosophy and CI tools and techniques. As an organization wide process, CI requires the efforts of all employees at every level. Deming (1995) highlights that organizations are evolved at a greater rate than at any time in recorded history. Since organizations are dynamic entities and since they reside in an ever-changing environment, most of them are in a constant state of flux. This highly competitive and constantly changing environment offers significant managerial opportunities as well as challenges. To effectively address this situation, many managers have embraced the management philosophy of Kaizen..

Jayaraman et al. (1995) demonstrate the application of the CI in simulation model development. This study presents several techniques that can be used to build accurate and efficient model of systems that include one or more transfer machines and long conveyors. The system under study shows a fair amount of complexity, so a five staged model has been developed to obtain a balance between model accuracy and execution performance. The simulation analysis helps to predict optimal combinations of operation times, material handling speeds, buffer sizes, preventive maintenance, breakdown schedules; and a considerable cost saving has been obtained.

Radharamanan et al. (1996) apply Kaizen technique to a small-sized custom-made furniture industry. The various problems that have been identified through brainstorming process are absence of appropriate methodology to assure quality, less compatibility of the individual protection equipment, old machines, disorganized workplace, inadequate and insufficient number of measuring instruments, lack of training, insufficient illumination at certain places and poor quality of raw material. Suggestions are also given to solve these problems. The main aim is to develop the product with higher quality, lower cost and higher productivity to meet customer requirements.

Sheridan (1997) has applied Kaizen events to Allied Signal Inc., jet engine manufacturing industry to overcome the difficulties like low production rates and large floor space requirements. The result indicates 89% improvement in WIP (work in process), 88.5% increase in productivity and floor space requirements are saved over 2000 sq. ft. by applying Kaizen events. Erlandson et al. (1998) apply Kaizen tool, i.e., poka-yoke on fuel-fitter assembly. The fixture that has been introduced shows considerable variation in the assembly process. The old fixture is replaced by the more promising of the two fixtures that have been designed, built and tested. Results show the increase in the production rate of about 80% and the error rate drops from above 50% to about 1%. More significantly, a large number of individuals who could not perform the assembly task with the old fixture are now being able to competently perform the task with the new fixture. Adams et al. (1999) explain that simulation is the powerful tool to support CI

process improvement. Two case studies including a commercial manufacturer and aerospace manufacturer have been performed where simulation is used to support the CI steps. In summary, the following conclusions are made:

- Process simulation can be used to support steps in the CI process.
- To be most effective, simulation model should be developed.
- For new situations, basic and simple models of the process are a good way to start.
- Interpreting the results with management can be beneficial.
- Animation features of the simulation give an ability to provide insight into the factory working.

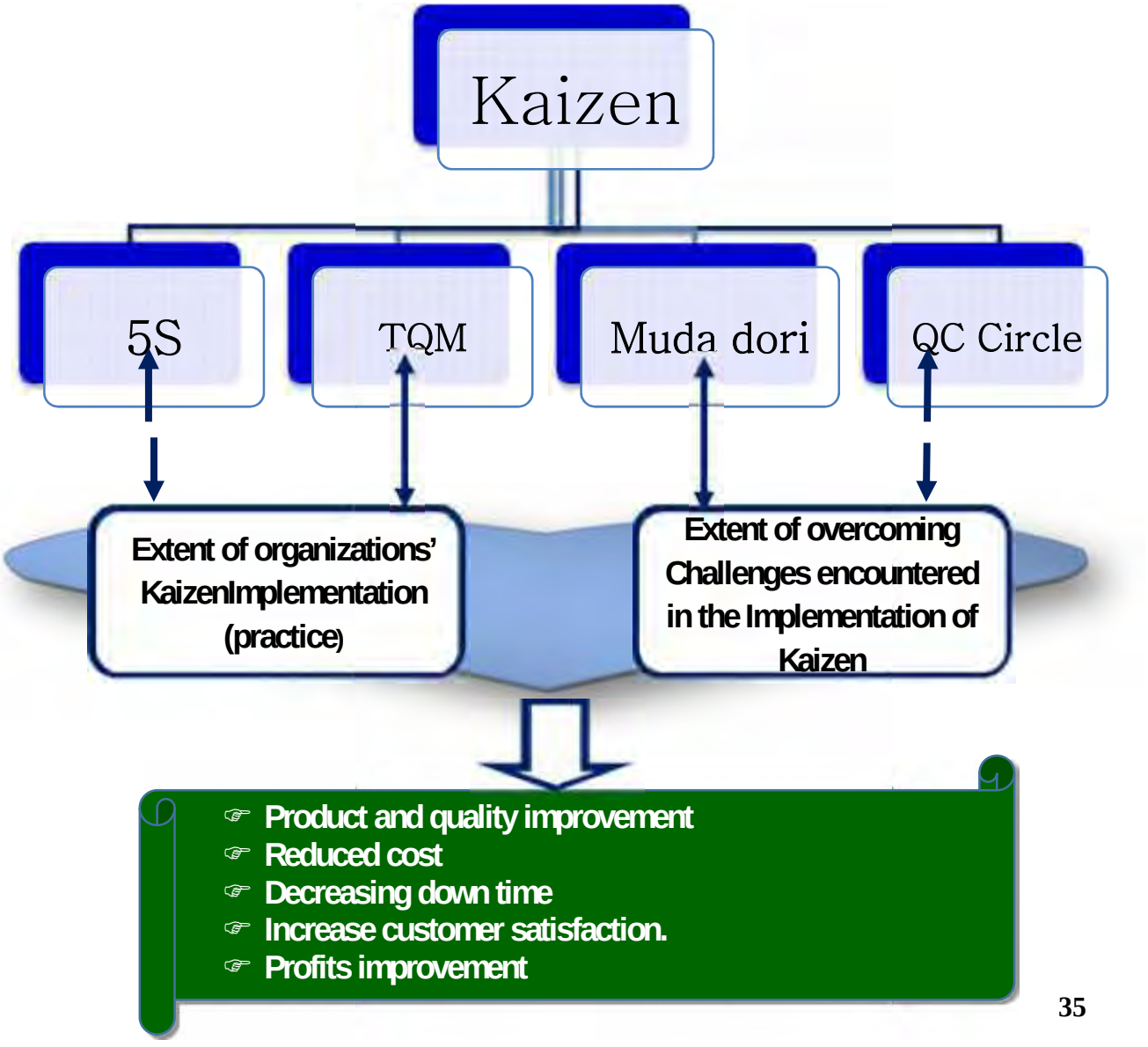
Chen et al. (2000) apply Kaizen approach on a small manufacturing designing system. The focus of this project is the virtual manufacture of meat tenderizer. The product is currently too expensive to produce. In order to address this system design problem, a design engineer, a manufacturing engineer, a quality engineer and two machining operators are invited to be the team members in this Kaizen project. After identifying the problem, a brainstorming process has been used to explore the team goals by receiving the information on current process of the product. Cellular manufacturing system is introduced to reduce production costs. Kaizen brings CI, it reduces 25% of the unit cost, reduces floor space requirement by 15% and it also develops a better communication network throughout the organization.

According to Asayehegn (2011), the Japanese management system as practiced in a number of countries has been seen positively by many managers and practitioners because the system has helped a number of enterprises to become productive, competitive, and has largely increased customer satisfaction. In fact, Toshihiko and Wimal K. (2011), argue that "…two national characteristics are critical for successful Kaizen transfer. One is the disciplined people who follow what they are asked to do i.e. keeping the deadline, quality control, and following standard operating procedure. The other is a hungry mentality, eager to do work which is above and beyond their responsibility.

2.13. Conceptual Framework

Conceptual framework (Figure 3.1) portrays Kaizen reform program through four division: 5S (Sort, Setting order, Shine, Standardize and Sustain), TQM (Total Quality Management), Mudadori (Waste elimination), and QC Circle (Quality Control Circle). The successfully implemented Kaizen program results with Continuous improvement of products and processes, reduce unproductive times, redefined the access, work and store areas, discipline in the work area, total Production Maintenance and so on.

Figure 2.5: Schematic diagram for the conceptual framework
Source: Developed by the Researcher, 2016



CHAPTER THREE: RESEARCH DESIGN

3.1. Introduction

This chapter presents the research design and methodology. It briefly outline sample size and sampling techniques, sources of data, tools and procedures of data collection, reliability and validity measures, analysis of data, and ethical considerations.

3.2. Research Method

According to Kothari (2004), a research design is the arrangement of condition for collection and analysis of data in the manner that combine relevance to the research purpose with economy in procedure. This study employed descriptive and causal research approach. The purpose of employing this method is to describe the nature of a situation, as it exists at the time of the study and to explore the causes of particular phenomena (Saunders et al, 2003). The researcher opted to use this kind of research approach to obtain first hand data from the respondents to formulate sound conclusions and recommendations for the study.

For the purpose of this study, the researcher combined both quantitative and qualitative research methods for triangulation. Consequently, the use of the triangulation approach was to cross-verify the collected data and/or information from two or more sources. The researcher generally used the survey, interview, and observation, questionnaires to gather the required data from Sino-Ethiop Pharmaceutical.

3.3. Target Population

Sino Ethiop Pharmaceutical Factory workers in Addis Ababa are the population of the study. This comprises the managers, kaizen promtionteams (Kpt),facilitators . These were considered relevant because they are the ones who are acquainted with the information needed on the topic under discussion.

3.4. Sampling Size and Sample Technique

As there is time and other limitations to visit all manufacturing sectors, the researcher attempted to visit two manufacturing sector organizations in Addis Ababa, namely, Sino Ethiop Pharmaceutical Factory in order to incorporate the important personnel who can provide pertinent information regarding topic under discussion.

Twenty percent (20%) of Sino-Ethiop Pharmaceutical in Addis Ababa are selected as a sample for the study. The total number of population of Sino-Ethiop pharmaceutical factory In Sino Ethiop pharmaceutical industry the total population is 230 out of which 4 are top management, 13 are middle management, and 213 are operational workers who are selected for this study.

In order to achieve the aim of the study, the researcher used non-probability purposive sampling technique to select the managers and simple random sampling for kaizen promotion teams and facilitators and operational workers in which the researcher selects by scrolling piece of paper and insert to basket then shaked and picked as a lottery method . A total sample of 45 was used in this study.

Table 3.1. The number of managers, kaizen promotion teams and facilitators in each of manufacturing sector organizations.

Manufacturing Sector Organization	Respondents	population	Sample size	Sampling techniques
Sino-Ethiop Pharmaceutical	**Managers**	4	4	Purposive sampling
	KPT and Facilitators	33	16	Simple Random Sampling
	Operational Workers	193	25	Simple Random Sampling
Total		230	45	

Source: Sino Ethiop, 2016

3.5. Sources of Data

The choice of particular method of collecting data depends upon the purpose of collecting data, the information being collected, and the resources available for the researcher and the skills of the researcher (Kothari, 2004). Accordingly, the data for this study was collected from both primary and secondary sources.

3.5.1. Primary Data

Primary data are those data that are gathered for a specific purpose or for a specific research project. Primary data are more accurate and reliable compared to secondary data.

(Saunders et al, 2003). The source of primary data for this study are company's managers, operational workers , KPT leaders, photographs and observation.

3.5.2. Secondary Data

The secondary sources of data was obtained from published articles in business journals, books, theses, company reports and publications, websites and related studies on Kaizen philosophy. Acquiring secondary data are more convenient to use because they are already condensed and organised. Moreover, analysis and interpretation are done more easily.

3.6. Data Collection Instruments

Questionnaire and semi structured interview were used as data collection instruments for this study. These are presented in detail below.

3.6.1. Questionnaire

To obtain the study data, 45 questionnaires were distributed to all potential respondents in the selected manufacturing industry. Respondents are kaizen promotion teams and facilitators, operational workers familiar with information needed on the topic under discussion. Questionnaire consisted scale questions to collect opinions. Five point likert rating scale: 1: strongly disagree, 2: disagree, 3: neutral, 4: agree, 5: strongly agree) are employed when designing the questionnaire to measure the perceptions of the workers with regard to the practices of the kaizen philosophy. The content of the questionnaire is divided into four parts. Part one deals with personal data of the respondents. Part two contains questions concerning about level of implementation of Kaizen with respect to training and education, Kaizen tools and Kaizen pillars with a total of 38 questions. Part three questions deals with results/outputs achieved by implementing Kaizen in relation to Quality, Productivity, Profit, Delivery time, Safety, Employee motivation, Unused human talent and Employee Empowerment and Involvement containing 32 questions. The last

part of the questionnaire contains 8 questions with respect to challenges and constraints for implementation of Kaizen and also there is a blank place if there is an additional concept.

3.6.2. Semi-structured Interview

Qualitative empirical data was collected via semi-structured face-to-face interviews which are used because of their flexibility. In depth interviews provide rich insights for exploring, identifying, and understanding viewpoints and attitudes (Saunders et al., 2009). Moreover, they allow greater control over the interview situation (e.g. sequencing of questions) while providing opportunities for making clarifications and collecting supplementary information (Collis and Hussey, 2009).

The general manager and experts were selected for interview since their position is important in describing impact of Kaizen implementation on quality and productivity improvement in their company. The managers and experts know the implementation process, results obtained and the challenges and constraints for Kaizen implementation. Therefore, they have detailed information about the current status of the Kaizen practices and factors that hinder the implementation process. This helped the researcher to get more and significant information.

3.7. Procedures of Data Collection

First, the pilot survey was done using semi-structured interview and questionnaire to clarify the research arena. The experiences, knowledge, personal views on kaizen were documented. After identifying the research arena, questionnaire was designed and developed to address research questions in order to collect primary data for further analysis. After collecting the information, analysis was done to indicate strengths and opportunities for kaizen improvement. Analyzing the outcomes become helpful for

drawing possible recommendations about overall performance of organizations against the kaizen practice.

3.8. Analysis Method

Those major data collection methods was used in this study was qualitative and quantitative which was semi structured and structure interviews and questionnaires was used; that is interview guide; and documentary analysis template respectively. Then, the quantitative data collected through the questionnaire was entered into computer using latest Data View template of IBM SPSS Version 20 and cleaning was done to maintain accuracy and internal consistency before any statistical test when run.

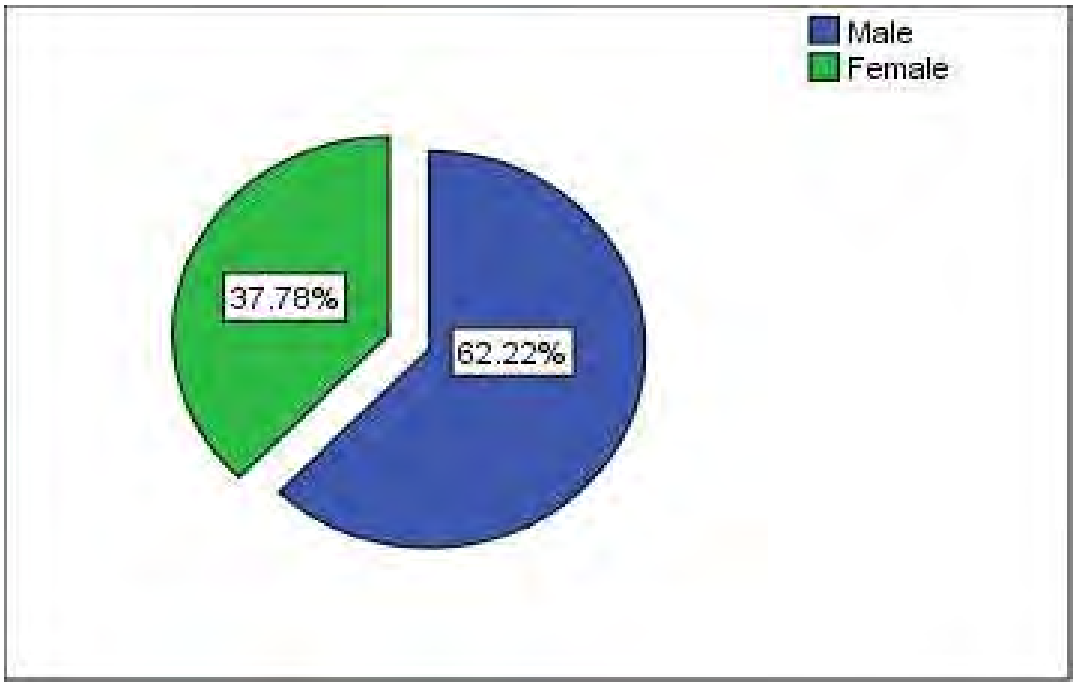
The results of the data analyses was presented using descriptive statistics, such as mean and standard deviation, and inferential statistics such as correlation and regression, the qualitative responses from semi-structured interviews with key informants, observations and documentary analyses was transcribed precisely and analyzed using thematic analysis and content analysis techniques respectively. Afterwards, the qualitative findings was presented theme by theme in order to triangulate the findings of the quantitative aspect of the study.

3.9. Ethical Considerations

It is compulsory to write and follow ethical measures for any research. The researcher tried to establish good relationships with all the interviewees because the selection of potential and appropriate people play important role for the reliability and validity of the qualitative data was generated. Those informants in this research first were given their informed consent to participate in the semi-structured interviews and observations of documents. Furthermore, interview questions was made simple and clear to avoid any misunderstanding and avoid ambiguity, as well as sensitivity to the pieces of information the informants would provide to the researcher.

3.10. Reliability and Validity

For the purpose of measuring internal consistency of the scales, Cranbach's alpha coefficient of correlation was used. This coefficient is a model of internal consistency, based on the average inter-item correlation, unlike other types of models. The quantitative data can also be dichotomous (i.e. ordinal), but the data should be coded numerically (Mohsen, and Reg,, 2011). To know the confidence interval, the researcher specified the level for the confidence interval to be 95%. Therefore, those scaled items in the questionnaire was found to be reliable and valid because the Cranach's alpha coefficient correlation was calculated to be .850 which is higher than 0.70 which suggest good internal consistency.


Male
Female
37.78%
62.22%

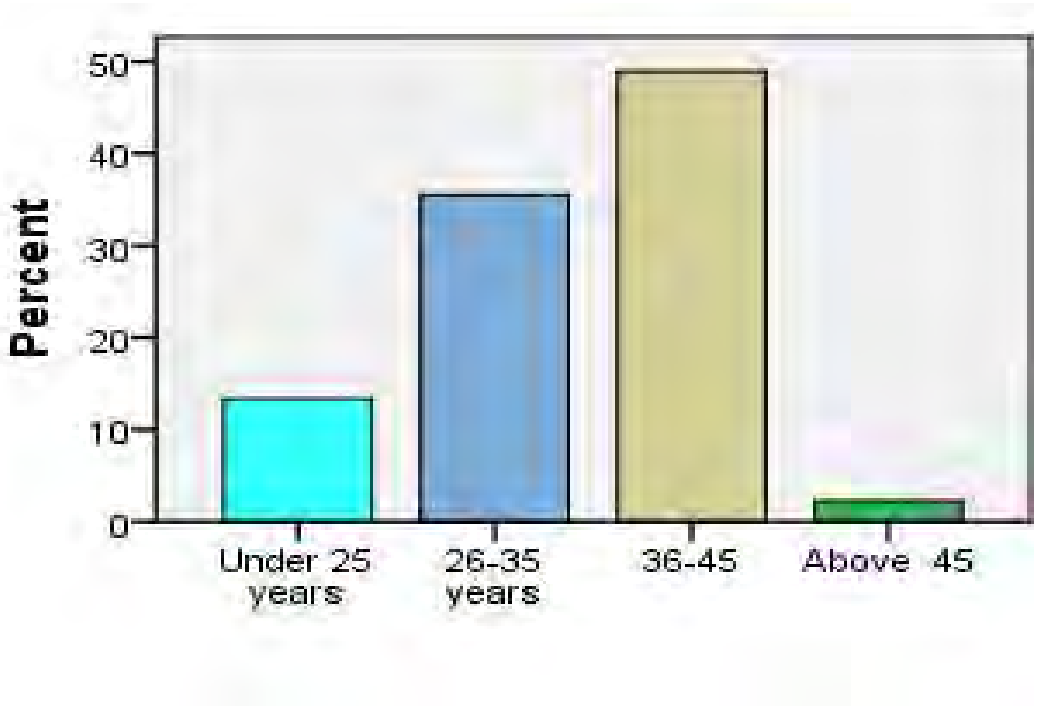
Based on the result of the questionnaire, the majority of the respondents falls in the age group 36 -45 years (48.9%) followed by 25 – 35 years (35.6%) Generally, 84.5% of the respondents are in the age range 26 – 35 years.

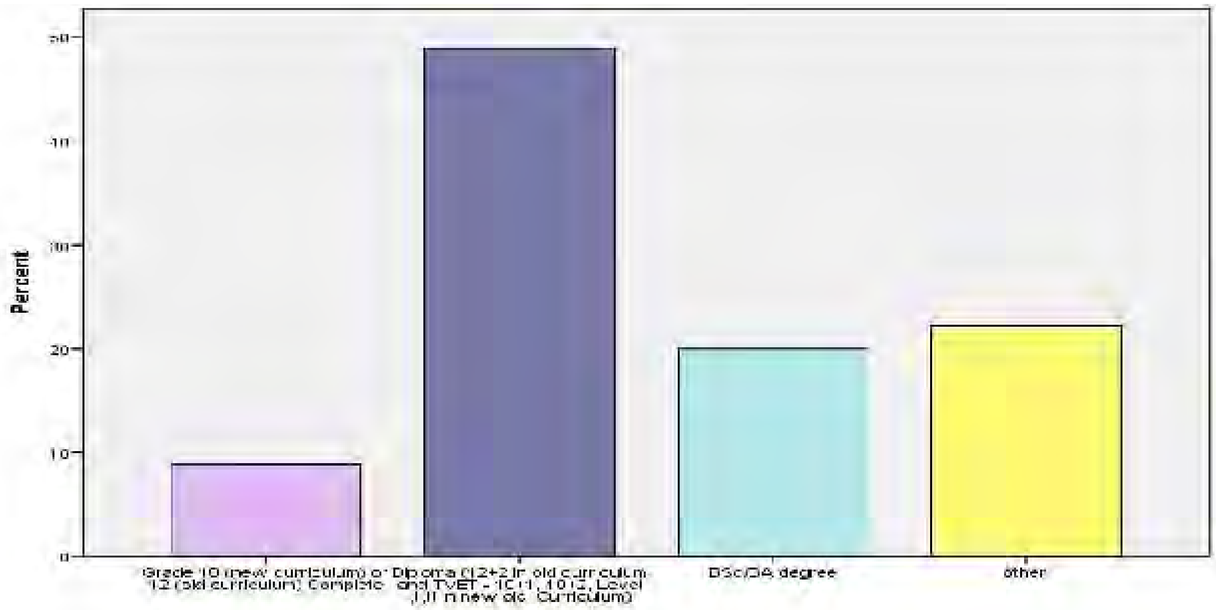
Regarding the level of education of the respondents, the majority of them graduated in diploma (12+2 in old curriculum and TVET - 10+1, 10+2, Level I,II,III in new old Curriculum), followed by respondents who have completed grade 10 (or new curriculum) or grade 12 (old curriculum).

Table 4.1. Background of respondents

Variables		Frequency	Percentage (%)
Sex	Male	28	62.2%
	Female	17	37.8%
Total		45	100%
Age	Under 25 years	6	13.3%
	26-35 years	16	35.6%
	36-45 years	22	48.9%
	Above 45 years	1	2.2%
Total		45	100%
Academic Level	Grade 10 (new curriculum) or 12 (old curriculum) Complete	4	8.9%
	Diploma (12+2 in old curriculum and TVET - 10+1, 10+2, Level I,II,III in new old Curriculum)	22	48.9%
	BSc/BA degree	9	20.0%
	Other	10	22.2%
Total		45	100%
Years of service	1-5 years	22	48.9%
	6-10 years	12	26.7%
	11-15 years	11	24.4%
	16-20 years	0	0.0%
	Above20 years	0	0.0%
Total		**45**	**100%**

Source: Sino Ethiop, 2016


Percent
50
40
30
20
10
0
Under 25 years
26-35 years
36-45
Above 45


Percent
20
10
0
other

4.2 Results of the Questionnaire and interview

4.2.1. Correlation Analysis

Table .4.2. Correlation of Training and Kaizen tools with productivity and quality

Variables		Productivity	Quality
Training and Education	Pearson Correlation	.714**	.695**
	Sig. (1-tailed)	.000	.000
	N	45	45
Suggestion System	Pearson Correlation	.486**	.454**
	Sig. (1-tailed)	.000	.001
	N	45	45
Quality Control	Pearson Correlation	.533**	.493**
	Sig. (1-tailed)	.000	.000
	N	45	45
Total Quality Control	Pearson Correlation	.722**	.676**
	Sig. (1-tailed)	.000	.000
	N	45	45

Since all variables are interval, the relationship between the independent variables i.e. Kaizen tools and the dependent variables i.e. quality and productivity was investigated using Pearson correlation coefficient. The results of correlation analysis on table 4.3 above, all the independent variables were positively and significantly correlated with the dependent variable i.e. quality, productivity and profit at ($P<0.05$)

Total quality control has the highest correlation with productivity (r = 0.722) followed by training and education (r=0.714), quality control (r = 0.533) and Suggestion System (0.486). Regarding the relationship with quality, education and training has the highest correlation coefficient (r = 0.695) followed by total quality control (r = 0.676), quality control (r = 0.493) and suggestion systems.

According to the interview results, the respondents acknowledged that their organization has given sufficient and consistent training about Kaizen before Kaizen implementation. The company's annual report of 2014/15 shows that 98% of their employees are given Kaizen training mainly on Kaizen overview, 5S, Muda identification and elimination and QCC/KPT. It implies that education and training is adequately provided for all employees including new employees before the implementation of Kaizen. This training and education is also scheduled on the appropriate time and it is given consistently to the employees.

According to EKI, (2014) the first implementation level started with training about basic Kaizen which consists of introducing Kaizen philosophy, ensuring total participation through organizing KPT based on the organizational structure of the companies and Japanese QCC model and introducing simple technical tools of quality and productivity improvement. The main outcome expected at this level is creating a change environment by bringing attitudinal change through total participation of all management and workers and insure an organized work place.

One aspect of attitudinal change is increased involvement means more responsibility, which in turn requires a greater level of skill. This must be achieved through training. For example, as it is stated by Norhayati et al. (2012), Baldrige Award winners place a great deal of emphasis on training and support it with appropriate provision of resources. Quality training includes educating and training all employees, help employees to increase knowledge, provide information about the mission, vision,

direction and organization structure to enable them to gain skills in an effort to improve the quality and thus solve the problem.

In addition, the responsible bodies are discussing the ideas. during interview with the manager confirmed that there is employee participation in dcesion making process through kpt leaders

Imai (1997), also argues that suggestion for improvements to be implemented by parties other than the proposer may be allowed. An award committee of the suggestion system selects excellent suggestions and the employees who have proposed them receive awards in an official award ceremony. Suggestion system is used to make employees Kaizen-conscious, provide an opportunity for the workers to speak out with their supervisors as well as among themselves. At the same time, they provide an opportunity for management to help the workers deal with problems. Thus, suggestions are a valuable opportunity for two-way communication in the workshop as well as for worker self-development.

In the interview session participants described in relation how KPTs working together starting from planning through celebrating achievements , in his group there is a trained of awarding " pen" for the best performer from their group by preparing small coffee ceremony at least quarterly. Moreover, others now coping this practice. This implies that employees are getting more motivated and involved in-group work. The managers also confirmed that there are many innovations both companies by doing so they can retain foreign currency.

The result is argued with Thessaloniki ,(2006) which is described as the philosophy underlying the creation of teams calls for a well-defined, planned process for giving responsibility to a group of people who know how to do their job well at their level and when to get other people involved.

Correlation of Kaizen pillars with achievements of kaizen implementation

Table 4.3. The Correlation of Kaizen pillars with achievements of kaizen implementation

		Kaizen Achievements	5S	Standardization	Waste elimination
Kaizen Achievements	Pearson Correlation	1	.732**	.635**	.695**
	Sig. (1-tailed)		.000	.000	.000
	N	45	45	45	45
5S	Pearson Correlation	.732**	1	.696**	.635**
	Sig. (1-tailed)	.000		.000	.000
	N	45	45	45	45
Standardization	Pearson Correlation	.635**	.696**	1	.677**
	Sig. (1-tailed)	.000	.000		.000
	N	45	45	45	45
Waste elimination	Pearson Correlation	.695**	.635**	.677**	1
	Sig. (1-tailed)	.000	.000	.000	
	N	45	45	45	45

**. Correlation is significant at the 0.01 level (1-tailed).

Table 4.4 shows that all kaizen pillar constructs (5S, Standardization, and waste elimination) are positively and significantly, ($p < 0.01$) correlated with the achievements of kaizen. From these variables, 5S has the largest coefficient ($r = 0.732$) followed by waste elimination ($r = 0.695$) and standardization ($r = 0.65$).

The correlation result show if the organization improves 5S, waste elimination, and standardization, kaizen achievements such as quality and productivity will be improved. Therefore, Kaizen implementation through 5S, waste elimination has power to determine quality and productivity improvements, which is consistent with Imai, (1986).

During interview sessions top managers mentioned that by implementing 5s such as sorting ;they have 86 items avoided,.90 tools properly placed ,clean working environment created .saved ,by set in order they have saved time before consuming time for searching tools and also saved space and they have got 80-85% achieved and reduced searching time from 30 minutes to 30 seconds .;shine ; by doing this they have been creating ;conducive working environment ,increase employees motivation ,increase productivity and also have changed working culture which means when they go home their apply these tools and they have got 90-96% achievement .standardization ;procedure. Polices .plan ,directives, have been applied and they have benefited in terms of work discipline, working culture ,create computation among employees ,sop should become customized .idea, opinion comes from bottom up approach through their hierarchy ,works done less than previously taken time ,.quality improved based on quality standard .

According to Imai (1986, 1997), the two cycles PDCA and SDCA revolve regularly to spread a culture of continuous improvement as a standard practice within an organization. This means an organization should never settle on a status quo. Therefore since Kaizen always assume there is always better improvement, the company is expected to exert its effort towards better improvement and sustain all of its achievements to be on a continuous improvement track. In addition the company's document as shown in figure below provided by photos and conducted direct observation within the factory reveals that the company succeeded in 5S.

Once sorting has taken place, efficient storage methods must be enacted so that items are easy to locate and use, as well as put away (Hough, 2008). The logic behind this stage is

that everything that is needed to do a job should be placed where it can be easily accessed (Howell, 2009). Every tool, every Standard Operational Procedure (SOP) and Material Safety Data Sheet (MSDS) manual must be designated a place where it can be found easily when needed. during interview and observation the researcher confirmed that the application of kaizen are properly used and benefited in terms of time and energy by searching of tools reduced from 30 minutes to 30 seconds and also un necessary motion

The interview conducted with the managers also ensures that in most of the departments they started doing their processes based on standards and trying to make improvements in most of them. The company document also shows that there are standard procedure manual for some of their process. Moreover, the result of the interview shows that human talents are not fully used. This implies that the companies being studied are not fully exploiting their human talents for their effective functioning.

Table 4.4. Profit of Sino Ethiopia (2013- 2016)

Year	2013	2014	2015	Rate (2014 - 2015)
Revenue	24,661,365	37, 196,117	43,635,916	0.17
Cost of sales	19,490,289	37,334,502	40,629,758	0.081104
Gross profit	5,171,079	138,385	3,006,158	0.953966
Other income	1,230,095	287,944	611,275	0.528945
Expenses	4,384,165	8,114,990	9,821,746	0.173773
Profit (loss) from the operation	1,304,458	5,694,568	6,729,715	0.153817
Financial cost	3,268,125	1,598,678	3,729,715	0.571367
Profit (Loss) from the operation	1,235,465	7,965,430	12,934,028	0.384149
Transfer to legal reserve	1,239,095	7,965,430	12,934,028	0.384149

Source: Sino Ethiop, 2016

Based on the above table (Profit of Sino Ethiopia (2013- 2016)), the profit of the organization has increased steadily during and after the implementation of Kaizen philosophy. During the year 2014 - 2015 the revenue of the company increased by 17%. This indicates that kaizen implementation has a contribution to increase revenue and profitability.

Multiple Regression Analysis:

In this part of the analysis includes a regression model to test the hypotheses. Kaizen tools and kaizen pillars were taken as independent variables against overall kaizen achievement as dependent variable in a multiple regression model. For all the hypotheses of the study below hypothesis test was used at 95% confidence interval.

Table 4.5. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.783[a]	.613	.595	.34041

a. Predictors: (Constant), Kaizen_pillars, Kaizen_Tools

b. Dependent Variable: Kaizen achievements

From table 4.6., it has been seen that R-value is 0.783. Therefore, R-value (.783)for kaizen tools and kaizen pillars suggested that there is a strong effect on kaizen achievements. From the table, it can also observed that the coefficient of determination i.e. the R-square (R^2) value is 0.613, which representing that 61.3% variation of the dependent variable (Kaizen achievements) is due to the independent variables (kaizen pillars and kaizen tools).

Table 4.6. ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	P - value
1	Regression	7.723	2	3.861	33.324	.000
	Residual	4.867	42	.116		
	Total	12.590	44			

a. Dependent Variable: Kaizen Achievements (results)

b. Predictors: (Constant), Kaizen pillars, Kaizen Tools

From the table 4.7., it is identified that the value of F-stat is 33.324 and is significant as the level of significance is less than 5% ($p< 0.05$). This indicates that there is statistically significant association between kaizen tools and pillars and kaizen achievements. Additionally, this also indicated that the null hypothesis is rejected and alternative hypothesis is accepted. Hence, it can be concluded that kaizen tools and kaizen pillars have significant impact on kaizen achievements (results) of Sino Ethiop.

Table 4.7. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.798	.429		1.861	.070
	Kaizen Tools	.083	.116	.096	.711	.048
	Kaizen pillars	.711	.134	.713	5.297	.000

a. Dependent Variable: Kaizen Achievements

In the table-4, Unstandardized coefficients indicated how much the dependent variable varies with an independent variable, when all other independent variables are held

constant. The beta coefficients indicated that how and to what extent kaizen tools and pillars influence kaizen achievement of Sino Ethiop. It has been found that, Kaizen pillars (beta = .713 t = 5.297, P < 0.05) has the highest influence or significant impact on kaizen achievements followed by kaizen tools (beta = .096, t = .711, P < 0.05).

4.3. Response on Challenges and Constraints of Kaizen Implementation

According to EKI (2014), both manufacturing and service providing industries are facing the following challenges during the implementation. These challenges are; local industry products are not competent due to poor quality, not providing result based evaluation and rewarding system, information and support providing services are not information technology based, the societies have low awareness regarding to gender issues, and service providing systems are not in way. Additionally, unavailability of enough skill labor, quality standard of support provided by development stakeholders is not good, confusing about the implementation and knowledge of Kaizen, locally, lack of providing transportation services lack of performance and leader ship capacity, poor and result less working culture, bad thought of the society towards quality, local service and products and unavailability in number and poor quality of agricultural products which are inputs for manufacturing industries are the major challenges of kaizen implementation.

Table 4.8 Challenges and constraints of kaizen implementation.

No	Variables; Challenges of Kaizen implementation	Mean	St. D
1	Economic (financial constraints)	3.18	1.41
2	Lack of management support or leadership	3.16	1.45
3	Ineffective training	3.05	1.41
4	Employee attitudes (lack of commitment)	2.88	1.43
5	Insufficient participation by workers	3.25	1.31
6	Ineffective communication systems	3.04	1.31
7	Factory structure	3.16	1.36
8	Misconceptions (misunderstanding) about Kaizen	2.91	1.54
9	The training has brought desired results	3.99	0.77
Average		**3.99**	**1.32**

Based on table 4.14 about the challenges and constraints for Implementation of Kaizen, all variables fall under the range of neutral. These are economic (financial constraints), lack of management support or leadership, ineffective training, employee attitudes (lack of commitment), ineffective communication systems, insufficient participation by workers, factory structure and misconceptions (misunderstanding) about Kaizen with an average of 3.08.. The researcher understands that when one tends to challenge the conventional wisdom and received assumptions of the past and introducing new approaches to the system, it is inevitable that this reinvention process will have tendency to challenge oneself back Having the above reality in mind, the respondents were answered in interview response /information on challenges encountered in implementation of KAIZEN to the selected companies. The summary of the survey result revealed the existence of challenges such as knowledge gap expressed in the form of weak understanding about KAIZEN concepts and its objectives; . However, interviewees from the management side argue that all the capacity building measures keeping employees on equal footing were taken. Insufficient attitudinal change by employees and

management remains challenging. The survey result made known that this insufficiency in attitudinal change is expressed in the form of resistance to change; old mentality expressed in the form of benefit orientation by some of the management members and employees; negative thinking emanating from status consciousness, fear of change and the like; and lack of sense of belongingness. .In general, the researcher has observed gap in coping up with the new system which increase values pertaining to cooperation within the system as well as with external customers. Follow up problems are also still unsolved for reasons like lack of experience and knowledge to follow and record the performance of each employee under one's supervision. Similarly overlying responsibilities emanated from shortage of man power put another pressure on individuals who bear those responsibilities. There are problems related to the participatory decision making expressed in the form of ambiguity about criteria of work assignment; lack of clarity in measuring work performances; delayed decisions in middle level management due to problems in delegation or empowerment; absence of clear monitoring and evaluation system coaching, redesigning and advocacy functions for varying reasons. There is constraint of resources to implement KAIZEN interns of old building ,equipment and machine has been seen in Awash tannery . This idea was supported by most of the participants in interview and the researcher observation.

CHAPTER FIVE

SUMMARY OF MAJOR FINDINGS, CONCLUSION AND RECOMMENDATIONS

This chapter presents the summary of major findings, conclusions and some recommendations appropriate for better kaizen implementation in the process of quality and productivity improvements.

5.1. Summary of Major Findings

The majority of respondents were males 28(62.2 %). This male dominance in number can be resulted from the company's gender composition of employees. Concerning their age, the majority of them falls in the age group 36 -45 years (48.9%) followed by 25 – 35 years (35.6%) Generally, 84.5% of the respondents are in the age range 26 – 35 years.

Regarding the level of education of the respondents, the majority of them graduated in diploma (12+2 in old curriculum and TVET - 10+1, 10+2, Level I,II,III in new Curriculum) followed by respondents who have completed grade 10 (or new curriculum) or grade 12 (old curriculum). Concerning the work experience of the study participants, the majority of them have above 5 years of work experience. About half of the respondents have more than 5 years of experience.

The kaizen tools were positively and significantly correlated with the dependent variable i.e. quality, productivity and profit at ($P<0.05$). Total quality control has the highest correlation with productivity ($r = 0.722$) followed by training and education ($r=0.714$), quality control ($r = 0.533$) and Suggestion System (0.486). Regarding the relationship with quality, education and training has the highest correlation coefficient ($r = 0.695$) followed by total quality control ($r = 0.676$), quality control ($r = 0.493$) and suggestion systems.

According to the interview results, the respondents acknowledged that their organization has given sufficient and consistent training about Kaizen before Kaizen implementation. The company's annual report of 2014/15 shows that 98% of their employees are given Kaizen training mainly on Kaizen overview, 5S, Muda identification and elimination and QCC/KPT.

Kaizen pillar constructs (5S, Standardization, and waste elimination) are positively and significantly, ($p< 0.01$) correlated with the achievements of kaizen. From these variables, 5S has the largest coefficient ($r = 0.732$) followed by waste elimination (0.695) and standardization ($r = 0.65$).

It has been found that kaizen tools and kaizen pillars have strong effect on the kaizen achievements. From the table, it can also observed that the coefficient of determination i.e. the R-square (R^2) value is 0.613 which representing that 61.3% variation of the dependent variable (Kaizen achievements) is due to the independent variables (kaizen pillars and kaizen tools).The beta coefficients indicated that how and to what extent kaizen tools and pillars influence kaizen achievement of Sino Ethiop. It has been found that, Kaizen pillars (beta = .713 t = 5.297, $P < 0.05$) has the highest influence or significant impact on kaizen achievements followed by kaizen tools (beta = .096, t = .711, $P < 0.05$).

5.2. Conclusions

The objectives of this study were to investigate the achievements and pinpoint the challenges associated with kaizen theory implementation in Sino Ethiopia Pharmaceutical in Addis Ababa. Based on the analysis of the data collected through questionnaires, interview, observation and some secondary data, the researcher has arrived at the following conclusions.

- There is a strong significant positive relationship between training and education, kaizen tools, kaizen pillars with kaizen achievements. The kaizen tools were positively and significantly correlated with quality, productivity, and profit.
- The result also showed that kaizen tools and kaizen pillars have strong effect on kaizen achievements.
- The result showed that the study organizations are providing necessary materials for Kaizen training and education. Appropriate professionals having sufficient skills for employees also give Training and education. Furthermore, new employees get induction training and attach to a mentor, employees became eager in learning new skills, skills and training record are maintained for everyone, and employees are cross-trained across departmental boundaries.
- Regarding to suggestion system, the result showed that there is smooth and convenient way to deliver ideas to concerned section and forwarded ideas properly reviewed by committees. Similarly, these ideas are successfully implemented in the study organizations. The suggestion system practiced in these companies will have a positive impact in making employees Kaizen conscious and building a smooth relationship among workers and between the management and the frontline workers.
- The result showed that a small group of workers formed based on genuine participation of front-line employees, who continually control and improve the quality of their work, products and services, the QCC are achieving the main objectives they are formed for. In addition to this, QCC activities practicing in the company proofs that employees are actively involved in Kaizen and that management has been successful in building the Kaizen infrastructure.
- To undertake all works within the factory there is standard for example: quality standard, time to complete certain job. The result has also showed that to inspection made by the factory to assure works are done according to standard and for standards are improving from time to time: For example: works done less than previously taken time.

- Concerning waste elimination, the result showed that there is a reduction of over production, and for new processes are designed to maximize value added activity. Additionally it also showed that the process waste reduced by at least 20%, i.e scrap, rework, order cycle time, process steps, transport, reject etc (3.48), and inventory and work in progress for almost everything is the lowest in the industry. However, the result shows that human talents are not fully used.
- According to the results of this study customer complaints are reduced, employees are now responsible for inspecting their own work and know exactly the standards they have to meet. Additionally, the result fall on agree scale that it made the key mind-shift from quality defect detection to active prevention scores, and the defect rate has been reduced.
- The result also revealed that after the implementation of Kaizen, efficient utilization of resources improved:- It is possible to manufacture by using less inputs than before, economics of scale improved:- which is producing more in order to decrease cost of production, there is change in new technology and change in technical efficiency: In factory there is improvement in utilization of factory equipment, tools etc

- Implementing, using of Kaizen tools (Suggestion system, QQC / Team Work and Total quality control (TQC), training, and education are the indicators of how far the first level of kaizen is implemented in these companies. The result of the research work shows that first level of kaizen is implemented at moderate level which is inferred from average mean result of the kaizen tools. Among these team work or KPT performance is at higher level of implementation. For the case of suggestion systems, forwarded ideas are not reviewed and successfully implemented at the required level, which shows there is a gap on its implementation.
- Concerning the Kaizen pillars: 5S, standardization and waste elimination the average result shows their level of implementation is at moderate level. Despite

the results of 5S and standardization the company is at high level of implementation but the case of the fifth, sustain ,the company is lowest level

- ☞ Through the implementation of Kaizen, both Sino Ethiopia Pharmaceutical and Awash Tannery have gained advantages such as; financial, cost reduction, obtaining additional income, reduction in defect rate, decrease down time, reducing time loss for searching of tools, labor productivity increased, and lead time improvement additional space obtained.
- ☞ The quality of products and service are also improved, clean and motivating working environments, team work, workers empowerment and involvement, motivation of workers development, increasing employee participation, knowledge of cost and quality conscious obtained.
- ☞ To implement Kaizen, these companies have faced a number of challenges like Economic (financial constraints), Ineffective training, Employee attitudes (lack of commitment), factory structure, lack of management support or leadership and misconceptions (misunderstanding) about Kaizen are not the challenges for the study companies.

5.3. Recommendations

Based on the findings and major conclusions drawn above, the researcher has forwarded the following recommendations.

- The organization should focus on training and educating employees to strengthen kaizen achievements and effective implementation.
- Training and rewards are needed to encourage workers properly maintain and continuously improve operating procedures and the workplace environment. This effort requires a combination of committed management, proper and continuous training, and a culture that makes sustaining improvement a habitual behavior

from the shop floor to management. Therefore the company should work more on sustaining activities.

- Education and training sessions are required to create an understanding of the dynamics of teamwork, multi-skilling, having open communication among employees, and creating workers which would embrace changes in future. Therefore more attention should be given on education and training. With standardized work there's no space for improvised tasks that may destroy plans and day-to-day budgets. Continuous improvement can be ensured through standardization.
- The company should work to maximize standardization since it is a base for continuous improvements. Standardization requires diligence in every section, improving work culture of employees and strong follow up to make sure works are done according to specified standards.
- The company also has to work more on waste elimination it since it has a strong correlation with quality and productivity improvement so as Sino Ethiop. can perform more in Kaizen implementation and will have a fertile ground for second level Kaizen implementation.
- As long as the challenges faced by the company, ineffective communication systems, insufficient participation by workers and employee attitudes (lack of commitment) are the major once which Sino Ethiop should work strongly based on the Kaizen organizational structure which allows them to have a smooth and easy communication system and also have a room for letting all employees to be participative.

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Appendix 1

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATED STUDIES

COLLEGE OF BUSINESS AND ECONOMIC

Instructions to the questionnaires

This is a research on the topic "The Implementation of Kaizen theory: Achievements and Challenges: The Case of Sino Ethiop and Awash Tannery". The research is carried out in order to fulfill the requirement of Graduate Studies of Addis Ababa University for Master's degree in public policy. You have been selected as a respondent to this questionnaire because I believe the information that you will provide will be very useful in enabling me realize the objectives of my study. In answering the questions you may be requested to put tick(✓) mark inside the box that indicates your level of agreement for each statement regarding the implementation of Kaizen theory. I highly appreciate the fact that you have taken to fill in this questionnaire. Thank you very much.

AlbelGirma

Part one personal data

1. Sex: Male _____ Female____✓____
2. Academic level Grade 10 ☐

Grade 10 (New curriculum) or 12 (old curriculum) ☐

Complete Diploma (12+2 in old curriculum and TVET-10+2, Level I, II, III in new old curriculum BSC/BA☐gree other please☐ecify ☐

3. Years of service: 1-5 _____ 6-10 _ 11-15_____ above 20_____

Please state your level of opinion for each given statement using the following scales:

1= strongly disagree 2=disagree 3= Neutral 4= Agree 5=strongly agree

The questionnaire is divided in to three phases as described in the following

Part I- Level of Implementation

I. Training and education

No	Criteria	1	2	3	4	5
1	Training and education has been given about Kaizen before Kaizen implementation					
2	The factory consistently gives training and education					
3	Factory provides necessary material for training and education.					
4	Training and education given by appropriate professionals having sufficient skills.					
5	New employees get indication training and attach to a mentor.					
6	Employees are cross-trained across departmental boundaries.					
7	Skills and training record are maintained for everyone.					
8	Employees became eager in learning new skills.					

2. Kaizen Tools

1		**Suggestion system**	1	2	3	4	5
	1.1	There is smooth and convenient way to deliver ideas to concerned section					
	1.2	Forwarded ideas properly reviewed by committees					
	1.3	Forwarded ideas successfully implemented					
2		**Quality control (QC) Circle/Team work**	1	2	3	4	5
	2.1	Work-groups meet as a team daily or at lease monthly.					

	2.2	Every member of the work-groups has clear roles.					
	2.3	Employees are multi-skilled and can cover a variety of job					
	2.4	Cross-functional project teams used to tackle big issues.					
	2.5	Teams are organized around processes or products					
	2.6	Work-groups have specific measurable team objectives.					
	2.7	Increased employee participation					
	2.8	Group perform activities with regard to quality, productivity					
	2.9	Teams celebrate achievements and expected success					
3		**Total quality control (TQC)**	1	2	3	4	5
	3.1	All employees involve in total quality control					
	3.2	Various methods used for quality control: such as statistical					

4. Kaizen Pillars: the extent in which housekeeping, standardization and waste eliminations

1		**Criteria**					
	1.1	**Sorting:** The factory properly differentiate between necessary and unnecessary item					
	1.2	**Set in order:** All products, equipment, tools and work environment properly cleaned					
	1.3	**Shine:** All products, equipment, tools and work environment properly cleaned					
	1.4	**Standardize:** SS working for sustaining SS within the factory					
	1.5	Sustain: Factory efforts for sustaining SS within the factory					
2		**Standardization**					
	2.1	To undertake all works within the factory there is standard. For example: quality standard, time to complete certain job					

	2.2	Inspection made by the factory to assure works are done according to standard					
	2.3	Standards are improving from time to time: for example works done less than previously taken time					
3		**Waste elimination**					
	3.1	Process waste reduced by at least 20%0, i.e scrap, rework, order cycle time, process steps, transport, reject etc.					
	3.2	Inventory and work in progress for almost everything is the lowest in the industry.					
	3.3	Over production reduced					
	3.4	New process are designed to maximize value-added activity.					
	3.5	Waiting without work removed					
	3.6	Unnecessary motions are reduced					
	3.7	Equipment breakdown are virtually eliminated.					
	3.8	Human talents are fully used					

Part II- Result/outputs achieved by implementing Kaizen

No		**Criteria**					
1		**Quality**					
	1.1	The company has made the key mind-shift from quality defect detection to active prevention.					
	1.2	The defect rate has been reduced.					
	1.3	Employees are now responsible for inspecting their own work and know exactly the standards they have to meet.					
	1.4	Employee use the 'SS-why' technique to solve problem					
	1.5	Product produced as per pre-established standards.					

	1.6	Customer complaints reduced					
2		**Productivity**	1	2	3	4	5
	2.1	Efficient utilization of resources improved:- it is possible to manufacture by using less inputs than before.					
	2.2	Economic of scale improved:- which is producing more in order to decrease cost of production.					
	2.3	In factory there is change in new technology.					
	2.4	Change in technical efficiency: In factory there is improvement in utilization of factory equipment, tools etc.					
3			1	2	3	4	5
	3.1	Costs are reduced to produce products, in comparing to previous cost.					
	3.2	Sales increased.					
	3.3	Expenses decreased.					
4		**Delivery time**	1	2	3	4	5
	4.1	Idle time is decreased					
	4.2	Production capacity increased					
	4.3	Reduction in manufacturing lead time					
5		**Safety**	1	2	3	4	5
	5.1	Decrease number of accidents, injuries.					
	5.2	Machine breakdown decreased.					
	5.3	Safety protection materials are strictly used.					
	5.4	Health and occupational safety of workers improved.					
6		**Employee motivation**	1	2	3	4	5

	6.1	Absenteeism decreased.					
	6.2	Improvement ideas increased.					
	6.3	Employee complaint decreased.					
	6.4	Promotions and career development system introduced.					
	6.5	Policies of compensation and benefits implemented.					
7	No	**Unused human talent**	1	2	3	4	5
	7.1	There is a room for potential or ability of team members.					
	7.2	Many improvement and innovative ideas have been submitted.					
	7.3	Submitted ideas have been discussed properly.					
8	No	**Employee Empowerment and Involvement**	1	2	3	4	5
	8.1	Every jobholder known his or her own unique contributions.					
	8.2	Employees are given full responsibilities for their own work.					
	8.3	Teams set and meet their own improvement objectives.					
	8.4	Teams collect data on performance and use this with their manager to make continuous improvements.					

Part III- challenges and constraints for Implementation of kaizen

No	Criteria	1	2	3	4	5
1	Economic (financial constraints)					
2	Lack of management support or leadership					
3	Ineffective training					

4	Employee attitudes (Lack of commitment)					
5	Insufficient participation by workers					
6	Ineffective communication system					
7	Factory structure					
8	Misconceptions (misunderstanding) about kaizen					

If you have additional concept

_____

_____

Appendix-B

Interview questions

1. Education and training are given regarding to kaizen before being implemented
2. Do you believe that kaizen principles are successfully implemented in your organizations?
3. What are the key successes of kaizen since its implementing in your company?
4. What major challenges did you face so far as a manager and what threats are there for sustaining the system?
5. Suggestion system, how ideas are forwarded by employee method, reviewing system suggested idea implementation, what percent of forwarded ideas are implemented within your organization so far?
6. What kind of incentive mechanism do you use to your employee? Employee selection criteria's for the reward, types of motivation given to employee financial and Non-financial.
7. Does kaizen fit in to your work culture?
8. Do you think that 0 defect is apply in your company? How? What extent?
9. In order to create clean and conducive environment what you did?
10. Do you think that employees participate in decision making process?
11. Quality and productivity increased? To what extent


BLOCK- 1
BLOCK- 3


ሰባቱ የብክነት ዓይነቶች
1) ከሚፈለገው በላይ የማምረት "Muda" of Overproduction
2) የማከማቸት ክምችት "Muda" of Inventory
3) የመጠበቅ "Muda" of Waiting
4) የማጓጓዝ "Muda" in Transporting
5) ብልሽትእንዲን ያለው ምርት የማምረት "Muda" of
Defect-making
6) የእንቅስቃሴ "Muda" of Motion
7) የአሠራር "Muda" in Processing


SFFECO
SFFECO
FIRE

SINO-ETHIOP ASSOCIATE (AFRICA) PRIVATE LIMITED COMPANY

AUDITORS' REPORT AND FINANCIAL STATEMENTS

FOR THE YEAR ENDED 7 JULY 2015

ABRAHAM TESHOME & CO.
CHARTERED CERTIFIED ACCOUNTANTS
P.O.Box 26012 code 1000

አብረሃም ተሾመና ጓደኞቹ
ቻርተርድ ተመሰከረላቸው የሂሳብ አዋቂዎችና የተፈቀደላቸው ኦዲተሮች

Abraham Teshome & Co
Chartered Certified Accountants & Authorized Auditor

INDEPENDENT AUDITORS' REPORT TO THE SHAREHOLDERS OF SINO-ETHIOP ASSOCIATE (AFRICA) PRIVATE LIMITED COMPANY

We have audited the accompanying financial statements of Sino-Ethiop Associate (Africa) Private Limited Company which comprise the Balance Sheet as of 7 July 2015, and Income Statement, statement of Change in Equity and Statement of Cash Flow for the period then ended and a summery of significant accounting policies and other explanatory notes.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with International Financial Reporting Standards. These responsibilities includes: designing, implementing and maintaining Internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error; selecting and applying appropriate accounting policies; and making accounting estimates that are reasonable in the circumstances.

Auditors Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with International Standards on Auditing. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance whether the financial statement is free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of financial statements. We believe that our audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.
The Company registered a capital of Birr 71,140,000. While the Commercial Code of Ethiopia and the Memorandum of Association of the Company requires full payment of the registered capital, it is not paid fully.

Opinion

In our opinion, except for the effect of such adjustments the financial statements give a true and fair view of the financial position of the Sino-Ethiop Associate (Africa) Private Limited Company as at 7 July 2015, and the results of its operations and its cash flows for the year then ended in accordance with *International Financial Reporting Standard for Small and Medium-sized Entities (IFRS for SMEs).*

Addis Ababa
29 September 2015

Abraham Teshome & Co.
Chartered Certified Accountants

+251 911 231365, +251 116 620612, +251 118 298494 Fax: +251 116 634463, P.O.Box 26012 Code 1000

SINO-ETHIOP ASSOCIATE (AFRICA) PRIVATE LIMITED COMPANY
BALANCE SHEET
AS AT 7 JULY 2015

	Notes			2014
ASSETS EMPLOYED				
NON CURRENT ASSETS				
Property, plant and equipment -	2.1,3		74,616,383	88,205,024
Leasehold Land	4		1,252,400	1,292,800
Deffered Expenditure	5		16,173,433	18,195,112
			92,042,216	107,692,936
CURRENT ASSETS				
Inventory	2.2.6	9,935,907		13,013,514
Trade and other Receivable	7	52,912,327		50,110,168
Cash at bank	8	1,732,856		1,333,882
			64,581,089	64,457,564
TOTAL ASSETS			156,623,305	172,180,501
EQUITY AND LIABILITIES				
CAPITAL AND RESERVES				
Capital	1		71,140,000	71,140,000
Legal Reserve			258,814	258,814
Accumulated loss			(31,080,788)	(21,146,760)
			37,318,026	50,252,054
NON CURRENT ASSETS				
Bank Loan	11	83,031,453		94,413,617
Leasehold Land Payable		1,252,400		1,292,301
			84,283,853	95,706,417
CURRENT LIABILITY				
Taxation	9	115,458		84,199
Current Maturity of Term	11	13,443,684		13,443,684
Trade and other Payable	10	21,452,284		12,694,146
			35,021,426	26,222,029
			156,623,305	172,180,500

SINO-ETHIOP ASSOCIATE (AFRICA) PRIVATE LIMITED COMPANY
STATEMENT OF PROFIT AND LOSS
FOR THE YEAR ENDED 7 JULY 2015

Currency: Ethiopian Birr

	Note			2014
REVENUE	*12*		43,635,916	37,196,117
COST OF SALES	*13*		40,629,758	37,334,502
GROSS PROFIT			3,006,158	(138,385)
OTHER INCOME			611,275	287,944
			3,617,433	149,559
EXPENSES				
General &Administration expense	*14*	9,821,746		8,114,990
			9,821,746	8,114,990
PROFIT (LOSS) FROM OPERATION			(6,204,313)	(7,965,430)
FINANCIAL COST			6,729,715	0
PROFIT (LOSS) FOR THE YEAR			(12,934,028)	(7,965,430)
PROFIT TAX			0	0
			(12,934,028)	(7,965,430)
TRANSFER TO LEGAL RESERVE			0	
			(12,934,028)	(7,965,430)
			NIL	NIL

SINO-ETHIOP ASSOCIATE (AFRICA) PRIVATE LIMITED COMPANY
STATEMENT OF CHANGES IN EQUITY
FOR THE YEAR ENDED 7 JULY 2015

Currency: Ethiopian Birr

	Capital	Legal Reserve	Accumulated Loss	Total
Balance at 7 July 2014	*71,140,000*	258,814	(13,476,659)	8,529,893
Prior year adjustment	*0*	0	(943,576)	(58,839)
Net profit of 2014	*0*	0	1,239,095	131,029
Balance at 7 July 2015	*71,140,000*	*258,814*	*(13,181,139)*	*8,602,084*
Net profit of 2015	*0*	0	(7,965,430)	241,024
Prior year adjustment	*0*	0	(191)	(37,177)
Transfer to legal reserve	*0*			0
Balance at7 July 2015	*71,140,000*	*258,814*	*(21,146,760)*	*8,805,931*
Net Profit of 2015	*0*	0	(12,934,028)	199,405
Prior year adjustment	*0*	0		(9,568)
Transfer to legal reserve	0			0
	71,140,000	258,814	(34,080,788)	8,995,768

Authorized Auditor in Ethiopia
Abraham Teshome & Co.
Chartered Certified Accountants

SINO-ETHIOP ASSOCIATE (AFRICA) PRIVATE LIMITED COMPANY
CASH FLOW STATEMENT
FOR THE YEAR ENDED 7 JULY 2015

Currency: Ethiopian Birr

	Note			2014
Net profit (loss) for the year			(6,204,313)	(7,965,430)
Depreciation			13,899,980	16,041,346
Amortization			2,021,679	
Prior year Adjustment				(191)
Decrease (Increase) in			3,107,607	(5,304,449)
Decrease (Increase) in Trade and other Receivable			(2,802,158)	(45,545,120)
Increase (Decrease) in Trade and other Payable			8,768,138	-3,377,635
Net Cash (out)/in flow from	*13*		18,790,932	(46,151,480)
			31,259	(267,374)
Return on investment and				
Interest Paid			(6,729,715)	0
Capital Investment				
Increase in Differed Expenditure				(18,195,112)
Purchase of fixed asset		(311,338)		(7,353,054)
			(311,338)	(25,548,166)
Financing activities				
Long Term Loan		(11,382,164)		21,945,298
Increase in share		0		47,957,716
			(11,382,164)	69,903,014
			398,974	(2,064,006)
Change in cash and bank balance				
Cash and Cash Equivelent			398,974	(2,064,005)

Abraham Teshome & Co.
Chartered Certified Accountants

SINO-ETHIOP ASSOCIATE (AFRICA) PRIVATE LIMITED COMPANY
NOTES TO THE ACCOUNTS
FOR THE YEAR ENDED 7 JULY 2015

Currency: Ethiopian Birr

1. INTRODUCTION

Sino-Ethiop Associate (Africa) Private Limited Company was established on 26 June 2003 with a share capital of Birr 71,140,000 divided in to 7114 shares of Birr 10,000 par value each. The objectives of the Company are to produce capsules for pharmaceutical industry for domestic use and abroad, to build pharmaceutical industries and to undertake any relative business activity as permitted by low as stated in Article four of the Memorandum of Association of the company.

2. ACCOUNTING POLICIES

The significant accounting policies adopted and consistently applied by the company are as follows:

2.1 Fixed Assets

Fixed assets are stated at cost less accumulated depreciation

2.1.1 Depreciation on Buildings is provided on the straight line bases at the rate of 5 % per annum.

2.1.2 Depreciation is charged on all other assets of the company on the reducing balance of each pool of fixed assets at the following rate per annum, in accordance with proclamation 286/2002.

	Rate
Plant and Machinery	20%
Furniture and equipment	20%
Motor vehicles	20%
Others	20%
Computers and printers	25%

2.2 Stock

Stocks are valued at average cost method

2.3 Income and Expense Recognition

Accrual accounting concept is applied in recognition of Income and Expenses.

SINO-ETHIOP ASSOCIATE (AFRICA) PRIVATE LIMITED COMPANY
NOTES TO THE ACCOUNTS
FOR THE YEAR ENDED 7 JULY 2015

Currency: Ethiopian Birr

3. PROPERTY, PLANT AND EQUIPMENT

	Balance on July 7,2014	*Additions*	*Balance on July 7,2015*
COST			
Building	32,187,996	73,435	32,261,431
Plant and Machinery	96,391,655	60,725	96,452,380
Motor vehicle	1,650,756	0	1,650,756
Office furniture and Equipment	370,024	50,894	420,918
Computers and Printers	88,568	57,459	146,027
Others	293,157	68,824	361,981
	130,982,155	311,338	131,293,494
DEPRECIATION			
Building	5,156,603	1,613,072	6,769,674
Plant and Machinery	35,909,087	12,108,659	48,017,746
Motor vehicle	1,245,610	81,029	1,326,639
Office furniture and Equipment	252,595	33,664	286,260
Computers and Printers	54,002	23,006	77,008
Others	159,234	40,549	199,784
	42,777,131	13,899,980	56,677,111
NET BOOK VALUE	**88,205,024**		**74,616,383**

4. LEASEHOLD LAND

			2014
Cost		1,818,000	1,818,000
Less: Accumulated Amortization	525,200		484,800
Current YearAmortization	40,400		40,400
		565,600	525,200
		1,252,400	1,292,800

5. DEFFERED EXPENDITURE

			2014
Cost		20,216,791	20,216,791
Less: Accumulated Amortization	2,021,679		0
Current YearAmortization	2,021,679		2,021,679
		4,043,358	2,021,679
		16,173,433	18,195,112

SINO-ETHIOP ASSOCIATE (AFRICA) PRIVATE LIMITED COMPANY
NOTES TO THE ACCOUNTS
FOR THE YEAR ENDED 7 JULY 2015

Currency: Ethiopian Birr

6. INVENTORY

		2014
Finished Goods	3,122,913	3,517,338
Raw Materials	3,657,396	5,215,313
Packing materials	948,540	855,022
Spare parts	429,587	430,174
Work In Process	1,294,339	338,663
Sundry	292,391	289,701
	9,745,166	10,646,211
Goods In transit	190,740	2,397,303
	9,935,907	13,043,514

7. TRADE AND OTHER RECEIVABLE

		2014
Trade Debtors	8,993,083	4,336,291
Shareholders Account	41,796,884	43,792,975
Sundry Debtors	605,688	746,786
Withholding tax	1,175,026	619,363
Deposits and Prepayments	151,223	365,535
Staff Debtors	190,424	249,217
	52,912,327	50,110,168

8. CASH AND BANK

		2014
Cash at Bank	1,715,007	1,296,470
Cash on hand	17,849	37,412
	1,732,856	1,333,882

9. TAXATION

		2014
Income Tax	109,855	80,130
Turn Over Tax Payable	1,970	
Withholding tax Payable	3,633	4,069
	115,458	84,199

SINO-ETHIOP ASSOCIATE (AFRICA) PRIVATE LIMITED COMPANY
NOTES TO THE ACCOUNTS
FOR THE YEAR ENDED 7 JULY 2015

Currency: Ethiopian Birr

10. TRADE AND OTHER PAYABLES

		2014
Trade Creditors	6,020,898	78,923
Sundry creditors	785,919	1,271,939
Associated company	14,364,599	11,192,529
Pension and Provident fund	140,113	
Unearned Income	33,339	33,339
Accruals	117,416	117,416
	21,462,284	12,694,146

11. BANK LOAN

		2014
Long Term Loan	96,475,137	107,857,301
Less: Current Maturity of term	(13,443,684)	(13,443,684)
	83,031,453	94,413,617

A loan of Birr 98,576,253 was disbursed from Development Bank of Ethiopia during the year to be repaid on a quarterly installment of Birr 3,360,921 commencing from 31 October 2012 up to 30 April 2019.

12. REVENUE

Export Sales	12,288,485
Local Sales	31,347,431
	43,635,916

13. COST OF SALES

		2014
Direct Materials	21,655,821	18,220,529
Direct Labour	3,819,430	2,664,816
Fuel and lubricants	139,703	445,768
Electricity and Water	1,564,868	490,911
Depreciation	12,149,208	15,899,180
Repair and maintenance	403,608	528,895
Insurance	43,735	48,466
Packing materials	1,275,947	1,021,636
Miscellaneous	138,690	158,413
	41,191,010	39,478,615
Add Beginning Work in Process	338,663	
Less Ending Work in Process	1,294,339	338,663
	40,235,334	39,139,952
Add Beginning Finished Goods	3,517,338	1,711,887
Less Ending Finished Goods	(3,122,913)	(3,517,338)
	40,629,758	37,334,502

Abraham Teshome & Co.
Chartered Certified Accountants

SINO-ETHIOP ASSOCIATE (AFRICA) PRIVATE LIMITED COMPANY
NOTES TO THE ACCOUNTS
FOR THE YEAR ENDED 7 JULY 2014

12. GENERAL AND ADMINISTRATION EXPENSE

		2013
Salaries and related benefits	2,663,103	1,659,128
Uniform	25,961	38,123
Freight charge	953,870	666,093
Stationery	152,720	50,642
Donation	10,000	7,000
Transit and clearing	68,945	66,035
Sanitation	60,614	42,740
Fuel and lubricant	380,128	297,399
Professional fee	44,000	61,097
Consultancy fee	40,250	-
Entertainment	177,641	36,178
Advertisement	55,565	21,154
Maintenance	355,431	153,768
Miscellaneous	29,315	13,514
License and registration	151,344	525,307
Travel and Perdiam	180,758	99,537
Insurance	98,793	52,963
Bank Charges	58,270	21,207
Penalities	245,014	358,647
Municipality tax	77,070	-
Amortisation Beffered	2,021,679	-
Amortisation - lease hold Land	40,400	-
Depreciation	142,166	150,641
Telephone	81,955	62,990
	8,114,990	4,384,165

13. RECONCILIATION OF OPERATING PROFIT(LOSS) TO OPERATING CASH FLOWS

		2013
Net profit (loss) for the year	(7,965,430)	2,017,007
Depreciation	16,041,346	2,188,615
Prior year Adjustment	(191)	(943,576)
Decrease (Increase) in stock	(5,304,449)	(3,395,356)
Decrease (Increase) in Debtors	(45,545,120)	(202,089)
Increase (Decrease) in creditors	-3,377,635	2,601,012
	-46,151,480	2,265,613

14. CHANGE IN CASH

	2013	2014	Change
Cash on hand and at Bank	3,397,887	1,333,882	(2,064,005)
	3,397,887	1,333,882	(2,064,005)

SINO-ETHIOP ASSOCIATE (AFRICA) PRIVATE LIMITED COMPANY
NOTES TO THE ACCOUNTS
FOR THE YEAR ENDED 7 JULY 2015

14. GENERAL AND ADMINISTRATION EXPENSE

		2014
Salaries and related benefits	2,541,563	2,663,103
Uniform	29,463	25,961
Freight charge	1,650,012	953,870
Stationery	110,044	152,720
Donation	8,000	10,000
Demerage	22,242	
Transit and clearing	-	68,945
Sanitation	32,234	60,614
Fuel and lubricant	449,752	380,128
Professional fee	28,000	44,000
Consultancy fee	44,420	40,250
Entertainment	196,866	177,641
Advertisement	36,898	55,565
Office Rent	126,960	
Maintenance	122,213	355,431
Miscellaneous	96,710	29,315
License and registration	72,857	151,344
Travel and Perdiam	254,081	180,758
Insurance	49,478	98,793
Penalities	-	245,014
Muncipality tax	-	77,070
Amortisation Deffered	2,021,679	2,021,679
Amortisation - lease hold	40,400	40,400
Depreciation	1,750,772	142,166
Telephone	137,103	81,955
	9,821,746	8,114,990

15. FINANCIAL CHARGES

Interest Expense	6,667,836
Bank Charges	61,879
	6,729,715