Addis Ababa University School of Graduate Studies College of Education and

Behavioral Studies Department of Curriculum and Instruction

Practice and Challenges in the Application of Kaizen in Addis Ababa:

A Case of Yeka and Arada Sub-City Government Technical &Vocational, Educational & Training Kaizen Supported Manufacturing Small and Micro Enterprises

By:

Kinfe Adere

A Thesis Submitted to the School of Graduate Studies of Addis Ababa University Department of Curriculum and Instruction in Partial Fulfillment of the Degree of Master of Arts in Management of Vocational Education.

June, 2018

Addis Ababa, Ethiopia

Addis Ababa University College of Education and Behavioral Studies

Department of Curriculum and Instruction

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kinfe Adere

Approved by Board of Examiners

Getachew Habtamu (Ph.D)	_____	_____
Advisor	Signature	Date
Gebre-egziabher Debebe (Ph.D)	_____	_____
Internal Examiner	Signature	Date
Temesigen Fereja (Ph.D)	_____	_____
External Examiner	Signature	Date

DECLARATION

I hereby announced that the work which is being presented in this thesis entitled “Practice and Challenges in the Application of Kaizen in Addis Ababa ” is original work of my own, has not been presented for a degree of any other university and all the resource of materials used for this thesis have been appropriately acknowledged.

Kinfe Adere Signature _____ Date _____

This is to certify that the above declaration made by the candidate is correct to the best of my knowledge.

Dr. Getachew Habbtamu (Advisor) Signature_____ Date _____

ACKNOWLEDGMENT

To begin with, gratitude to the immense God for giving me the patience to start and complete this thesis works. Thank be to Holly Virgin Mary, and his saints too, for helping me during those remarkable times.

Second of all I am very thankful to my advisor Dr. Getachew Habtamu for his valuable comments, suggestions and he provided me during the progress report of the thesis. Special thanks go to my brother Mr. Nigussie Adere and Emebet Fikade for their unreserved effort to shape my thesis as well as sharing their experience and technical guidance throughout the period of this thesis work.

Thirdly I wish to express my deepest love and grateful gratitude to my wife Debrie Fikade. Your support and effort to shape my thesis was appreciative.

Fourthly of all I would like to thank all staff members my institutions and enterprise of Addis Abeba city, Arada and Yeka Sub City of TVET deans.

Lastly much more gratitude had also gone to my lovely family who supported me throughout my childhood and that strengthen me to look for in my life goals. I will never forget all the eagerness and encouragement of my family. My deepest gratitude reach to my mother who has lost her life before 4 years ago; rest in peace.

Finally I would like to say thanks to all my friends who supported me while doing this research thesis.

Kinfe Adere

Addis Ababa

June, 2018

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ACRONYMS AND ABBREVIATIONS

AAKI	Addis Ababa kaizen institute
BPR	Business Process Reengineering
CI	Continuous Improvement
CWQC	Company-Wide Quality Control
ESDP	Education Sector Development Program
FEMSEDA	Federal Micro, Medium and Small Enterprise Development Agency
FDRE	Federal Democratic Republic of Ethiopia
GDP	Growth Domestic Product
GRIPS	Graduate Institutes for Policy Studies
JICA	Japan International Cooperation Agency
MOE	Ministry of Education
MOFED	Ministry of Finance and Economic Development
MSMEs	Micro Small and Medium Enterprises
PDCA	Plan-Do-Check-Act
PM	Prime Minister
QCC	Quality Circle Control
QFD	Quality Function Development
SPSS	Statistical Package for Social Science
QCD	Quality, Cost and Delivery
TQC	Total Quality Control
TQM	Total Quality Maintenance
TPM	Total Production Management
TVET	Technical Vocational Educational Training
UNESCO	United Nations Educational, Scientific and Cultural Organization

ABSTRACT

As a continuous improvement tool for effective management, KAIZEN has been introduced in Ethiopia in various sectors including small and micro enterprises in Addis Ababa City administration. To what extent KAIZEN has been effectively implemented requires to be investigated to see the challenges of its implementation. The study aimed to assess the practices and challenges in the application of Kaizen at Yeka and Arada sub-city in the case of manufacturing small and micro enterprises in Addis Ababa City Administration. The researcher used a descriptive research design with a mixed approach. Data was collected from 32 enterprise owners through questionnaires and from 13 key informants using semi-structured interviews. A total of 45 sample respondents were involved in the study selected through purposive sampling (Purposive sampling is useful in these instances because it provides a wide range of non-probability sampling techniques for the researcher to draw on) and simple random sampling (Simple random sampling is the basic sampling technique where we select a group of sample for study from 324 SMEs. Each enterprise is chosen entirely by chance and each member of the enterprise has an equal chance of being included in the sample to select the study areas and sampling respondents respectively. The quantitative data were analyzed through descriptive statistics, (percentage, mean and standard deviation) using SPSS Version 24. The findings indicated that there were challenges which derived from various sources, like gaps in knowledge of enterprise owners and their negative attitude towards the kaizen implementation and gaps in the capacity and capabilities of the management body. Regarding stakeholders; poor follow up by TVET deans, SMEs officials and AAKI institution were observed. The majority of the respondents elicited that the training the feedback they were provided on kaizen implementation was not sufficient and encouraging for the smooth operation of Kaizen. It is recommended that concerning bodies should work together to implement kaizen as a strategy and giving continuous training, feedback and follow-up for both enterprise owners and kaizen operators to make the KAIZEN system implemented effectively.

Keywords: Challenges, waste elimination, Kaizen, 5Ss, stakeholders

CHAPTER ONE

1. THE RESEARCH APPROACH

This research mainly contained the background of the study, statement of the problem, research questions, and objectives of the study, significance of the study, delimitation of the study, limitation of the study, literature review, research methodology, result and discussion, research findings and recommendations

1.1. Background of the Study

Small and microenterprises (SMEs') play a great role in enhancing economic growth and sustainable source of earnings. According to Bizusew (2015), the SME sector in Africa is a lively example of small enterprises activities leading to successful growth and development of their emerging economies because the contribution of Micro and small enterprise in job creation and output growth is now widely accepted in developing countries like Ethiopia. Mead (1998) stated that the proper functioning of the SMEs & the market help people get opportunities to take part in some rewarding activities that can give power to and support more families (particularly, those who are disadvantaged otherwise, i.e., those who are poor and have limited alternatives). In developing countries, the economic importance of SMEs is similarly higher. In Ethiopia, for example, as discovered by (central statistics agency (CSA, 2003), SMEs account for the bulk of nonagricultural economic activities and nearly 95.6% of total SMEs are industrial employment. The aim of Ethiopian micro and small enterprise development and provision of micro and small enterprise services are to facilitate the entrepreneurs to take advantage of market opportunities and progress the access to skill opportunities that enhance entrepreneurial capabilities, Ethiopian Micro and Small Enterprise Development Strategy (Gebrehiwot & Wolday, 1997).

According to Henock (2016) as cited in (central Statistics Agency (CSA), 1997), there were a total of 584913 microenterprise operators and 2731 small-scale manufacturing activities. By the time the central Statistics Authority survey 2003 was conducted, the number has increased significantly to 974,676 micro enterprises (cottage and handicraft)

and 31,863 small-scale enterprises, and this is expected to be much higher when the result of the (CSA, 2006) is published. The persons engaged in the microenterprise manufacturing sector were about 1.3 million in which 94.18% were active owners, indicating a large degree of self-employment. The small manufacturing establishments were 97.8 thousand. Most of the microenterprises in manufacturing activities, (55% of the total) are engaged in food and beverages (of which 65% are women), followed by textiles, (23%). Whereas in the small-scale manufacturing sector 85% are grain mills, 4% metals, 3.5% furniture, 3% wearing apparel and 2% food products and rest in other sectors. When it comes to ownership 74% of micro producers, 17.5% of small scale and 0.2% of Medium and Large manufacturing businesses belong to women business operators (CSA, 2003).

However, African manufacturers are not only disadvantaged by the technological gap but also by the lack of knowledge in key managerial methodologies (Ohno et al, 2009). To reduce the knowledge and technology gaps, many African countries including Ethiopia introduced modern techniques of continuous improvement through building managerial capacity such as KAIZEN in the SMEs.

According to Imai (1986), Kaizen was a Japanese method of managing business and it is continuing improvement involving workers, middle and top managers. Accordingly, KAIZEN is considered as continuous improvement in personal life, home life, social life, and working life. According to Palmer (2001), Kaizen is continuous improvement of the standard way of work. Kaizen is a compound word involving two concepts: Kai (change) and Zen (for the better).The term comes from Gemba Kaizen meaning 'Continuous Improvement' (CI). As Dean & Robinson (1991) stated that Kaizen is one of the core strategies for excellence in production, and is considered vital in today's competitive environment and calls for endless effort for improvement involving everyone in the organization.

The idea of kaizen was first brought to the attention of Ethiopia in 2008, According to Adimasu (2015), the introduction of kaizen as a management tool in Ethiopia has been started with the assistance of JICA in response to the request of the government of

Ethiopia to the government of Japan for kaizen technology transfer to Ethiopia. All the concerned stakeholders selected KAIZEN as one of the management tools to improve and enhance the managerial capability to implement Growth and Transformation Plan.

Though KIZEN was implemented in SMEs with the intention of improving their performance, various reports on KAIZEN practices revealed that SMEs have encountered difficulties in implementing KAIZEN. In order to exploit the advantages SMEs get from KAIZEN, the difficult the SMEs encountered need to be overcome so that the SMEs boost their managerial and operational capacities form KAIZEN. Hence, the purpose of this study is to investigate current practices and challenges in the application of kaizen in Small and Medium sized Manufacturing Enterprises in Addis Ababa.

1.2. Statement of the Problem

Kaizen is important to increase productivity and recommendable to use in manufacturing specifically in SMEs sector. SMEs make up the most key sector of the Ethiopian economy. They create job opportunities for many of individuals, their work is strongly customer orientated; they are sources of innovation and entrepreneurial spirit; and they create competition and are the seed for enterprises of the future. Enterprises are believed to have a fundamental role in poverty reduction, employment generation as well as economic development like Ethiopia.

In Ethiopia, SMEs are given support by TVET colleges. TVET colleges provide training to SMEs in various areas to such as KAIZEN to boost the managing capability and improve their operational performance. Trainers are assigned to follow up the implementation of KAIZEN in SMEs and provide feedback to owner managers and implementers. At the same time by the technological gap but also by the bee deficient in knowledge in key managerial methodologies (Ohno et al, 2009). Despite the support provided to the SMEs, there are several challenges observed in Micro and Small Enterprises in Ethiopia, specifically in Addis Ababa which produced low productivity performance like lack of highly skilled human resources, poor employee motivation and lack of management commitment (Michael, 2014 and Eden, 2017).

Based on a preliminary survey made for this study, it was observed that SMEs' owners have quick return expectation after implementing KAIZEN, which is not easily

materialized. Although KAIZEN improves efficient use of materials and quality products, poor perception of enterprises, high wastage of materials and low quality products was observed in SMEs as a result of poor commitments of supported enterprises to apply kaizen philosophy.

1.3. Research Questions

The following basic research questions were formulated to guide the study.

1. What is the level of the enterprise owners perception on the importance of kaizen
2. What were the gaps between the kaizen strategy and application of kaizen?
3. What motivational factors small and micro enterprises got after they get kaizen support from Technical, Vocational, Educational and Trainings?
4. To what extent do the kaizen system has been practiced and implemented in Micro Small Enterprises?

1.4. Objectives of the Study

1.4.1. General Objective

The research was intended to investigate the practices and challenges of Kaizen application in Addis Ababa Arada and Yeka sub-city manufacturing small and micro Enterprises.

1.4.2. Specific Objectives

To investigate the practice and challenges of kaizen implementation, the specific objectives of the study were:

1. To examine and analyze challenges and practice encountered due to Kaizen program implementation in the study area.
2. To examine the benefits of KAIZEN implementation in Small and Micro Enterprises.
3. To assess the extent of KAIZEN implementation practices in Small and Micro Enterprises.
4. To review and evaluate the implementation of kaizen program to that of small and microenterprises.

1.5. Significances of the Study

The study helps Small and Micro Enterprises to understand kaizen principles, implementation strategies and adjustment mechanisms to sustain kaizen for SMEs. The results of this study will also serve as:

1. An input for TVET colleges to evaluate the effectiveness of the supports they provided to provide better support services to SMEs.
2. The study may also serve as a basis for further detail research KAIZEN implementation in other economic sectors.
3. It benefits these small and micro Enterprises owners and kaizen operators who engaged in manufacturing sector; since the research has a great advantage to overcome problem related to productivity improvement of micro and small enterprise.
4. The research results help all stakeholders within the TVET Program, mainly researchers, educators and implementers to improve the current practices of the Kaizen implementation.
5. This study gave Knowledge about those factors which may influence on the actual process of implementing the Kaizen Training at AAKI Government of Addis Ababa and encourage the stakeholders to take appropriate measures in order to maintain the quality of the Kaizen Training.
6. The study finding makes input for the future researchers in this area

1.6. Delimitation of the Study

The study was on KAIZEN implementation in the MSE sector especially in SMEs involved in the manufacturing sector. This is because the MSE sector is a prime strategy to economic development in Addis Ababa city. From the 10 sub-cities in Addis Ababa, two sub-cities were selected as all MSEs in Addis Ababa follow the same KAIZEN training, procedures and practices. Kaizen implementation guidelines are the same for all SMEs in the city and the Kaizen training provided by TVET institutions is also similar everywhere, so including other sub-cities and TVET institutions outside the sample sub-cities may not yield different results. Under the two sub-cities, the sectors selected for

this research were textile/garment, leather product, and metal/woodwork sector (manufacturing) because these sectors were large in number compared to other sectors in the sub-cities. Thus, the conclusions drawn in this study will not be generalized for all SMEs in the city.

The design employed in this study was a descriptive survey investigating the current status of KAIZEN implementation in SMEs manufacturing sectors. It did not show the impact of KAIZEN on SMEs performance. Thus, the results of the research should be interpreted in terms of what is happening instead of impact measurement.

1.7. Limitation of the study

This research faced some limitations. Among these problems were: Absence of enterprise owners during filling questioners, be short of sufficient information of respondents about kaizen, poor perception of enterprise owners on kaizen, time constraint on the side of the researchers and the sampled enterprise, lack of properly documented information and constraint getting key officials were the limitations of the study. However, the researcher tried to identify sound claims on the subject under study and solved patiently all problems. All those above-stated problems were the main limitations of the study.

1.8. Organization of the paper

This study has five chapters. The first chapter deals with the research approach consists of background the study, statement of the problem with the basic questions objectives scope, limitations and significance of the study. Chapter two is about review of related literature about Kaizen. The third chapter describes the research methodology and design, target population and sampling, data collection instruments, methods of data analysis, ethical concerns considered in the study. Fourth chapter present both quantitative and qualitative data, their analysis, findings and interpretation. Chapter five give explanations about Summary, Conclusions and forwards possible recommendations for concerned stakeholders at different levels.

1.9. Definition of Key Terms

Micro and Small Enterprises: are those business enterprises, in the formal and informal sector, with paid-up capital not exceeding Birr 20,000 and excluding technology consultancy firms and other tech establishments (Brhanu, 2014).

Microenterprise: a business operating on a very small scale, especially one in the developing world that is supported by microcredit. It is available at: https:// en.wikipedia.org/wiki/Micro-enterprise on May 12/2018

Small enterprise: is a business that employs a small number of workers and does not have a high volume of sales. It is available at: https://en.wikipedia.org/wiki /Micro-enterprise on May 12/2018

Technical, Vocational, Educational And Training: "those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding, and knowledge relating to occupation in various sectors of economic life", (The United Nations Educational, Scientific and Cultural Organization (UNESCO),1998).

Enterprise: It indicates a company or business that makes or sells goods or services in order to make a profit. It also refers institutions which hold all forms of training jointly with TVET provider's (ministry of education (MOE), 2008).

Kaizen: is a Japanese word that loosely translates to 'change for the good.' So, kaizen simply means to make improvements through long process. Forms of Kaizen a week-long Kaizen event and sustained forever. Also known as Kaizen blitz, rapid improvement process, or continuous improvement workshop. This is what people traditionally think of when they hear the term Kaizen (lmai, 1986).

Implementation: is the carrying out, execution, or practice of a plan, a method, or any design for doing something. As such, implementation is the action that must follow any preliminary thinking in order for something to actually happened (Birhanu, 2014).

CHAPTER TWO

2. REVIEW OF LITERATURE AND ANALYTICAL FRAMEWORK

2.1. Concept and Definition of Kaizen

Kaizen defined in different ways based on scholars. Based on this, Kaizen, as a philosophy, is defined as the spirit of enhancement based on the spirit of collaboration and commitment; equally pertinent in personal, home, social and working life (Brunet, 2000). 'The purpose of Kaizen to the workplace means ongoing (and relatively in expensive) improvement involving everyone from top management, managers and workers (Imai, 1986)." According to Robinson (1991), Kaizen is "continuous improvement" involving the entire workforce from the top management to middle managers and workers; the word of kaizen indicates a process of continuous improvement of the work and it is also a compound word involving two concepts: Kai (mean change) and Zen (mean for the better); The term also comes from 'Gemba Kaizen' meaning 'continuous" improvement' (CI). Therefore, kaizen is a Continuous improvement of the core strategies for excellence in production of SMEs.

According to Imai (1986), the concept of Kaizen was in the beginning developed in Toyota Corporation and extends among other Japanese manufacturers as they gained fame in the international market for high quality products in the 1980s. Since other Japanese companies also improved their performance, Kaizen has been viewed as a key element in Japanese management and has been presented as one of the sources of the competitiveness of Japanese manufacturers; Imai was the first who introduced kaizen to the international audience with his book, Kaizen: according to Imai, kaizen is an umbrella concept, means improvement, an ongoing improvement involving everyone, top management, managers, and workers.

The foundation of Kaizen was laid in Japan after the Second World War, when the country was attempting to rebuild factories and rethink many systems. The concept of Kaizen began to be formed and it took off in the 1950s (Imai, 1986). According to Masaaki Imai, the father of Kaizen strategy, it is the most important concept of Japanese management – the key of Japanese business success. The Kaizen principle is based on

ancient Japanese tradition and philosophy insofar as it seeks harmony through continuous improvement. In its contemporary form, it is used both to improve and streamline corporate processes as well as to gain developments on a personal level. The meaning of improvement in Kaizen should not be seen in isolation, but in a wider context, which is the real meaning of this expression borrowed from the Taoist and Buddhist tradition, focusing on improvement for all the society (Imai, 1986).

Imai (1997) further explained the concept of Kaizen as it is not just a management method but a thinking which instructs how a human should conduct his or her own life; this means that Kaizen focused on the way people approach work. It indicated also how management and workers can change their mindset together to improve their productivity Imai (1997) also described that the improvement can be divided into Kaizen and innovation. Kaizen signifies small improvements as a result of ongoing efforts. Innovation involves a drastic improvement as a result of large investment of resources in new technology or equipment. Imai also explains that in the context of Kaizen, management has two major functions: maintenance and improvement. Maintenance refers to activities directed towards maintaining current technologies, managerial and operating standards, and upholding such standards through training and discipline. Therefore, Kaizen under its maintenance function, management performs its assigned tasks so that everybody can follow standard operating procedure.

> *Kaizen is a philosophy of management as far as it stems from the view that any particular improvement should not be made to the detriment of the customers and wider community. Therefore, we should always have this wider context in mind when talking about the specific concept of Japanese management which integrates all the components within a dynamic whole and clarifies the underlying importance of social harmony (Imai, 1986).*

Figure 2. 1. Kaizen umbrella

Source: Imai (1986, p.4).

As we can see from the above figure 1.1., Kaizen is an umbrella concept covering most of those "uniquely Japanese " practices " like customer orientation ,TQC (total quality control) robotics, QC circles, suggestion system, automation, discipline in the workplace , TPM (total productive maintenance), Kamban, quality improvement, zero defects, small-group activities, cooperative labor management relations, productivity improvement and new-product development" these principles and tools significantly helped Japanese companies to develop process oriented way of thinking that assures continues improvement involving people at all levels. Imai reduced the principle and tools to one word under the umbrella (Imai, 1986).

Productivity cycle

As indicated in the above figure1, shows the productivity cycle schematically (David, 1979), at any given time, an organization that is in the midst of an on-going "productivity program" may be involved in one of the four stages or phases: Productivity Measurement, Productivity Evaluation, Productivity Planning, and Productivity Improvement. We abbreviate these four phases MEPI, where, M, E, P, I stand, respectively, for Measurement, Evaluation, Planning, and Improvement; organization that begins a formal productivity program for the first time can begin with productivity measurement and once the productivity levels are measured, they have to be evaluated or compared against planned values. Based on this evaluation, target levels of productivity are planned on both short- and/ or long-term bases.

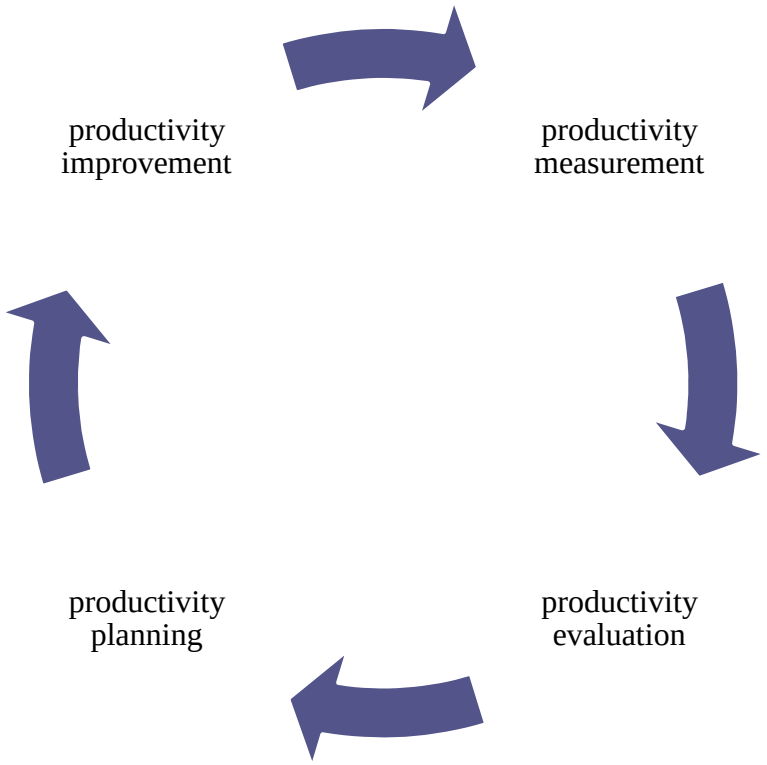


Figure 2. 2. The productivity cycle:

Source: researcher design

Productivity measurement, evaluation, planning, and improvement, which form a continuous process; abbreviated PMEPI (David, 1979), to achieve the planned targets, productivity improvement takes place in a formal manner. In order to assess the degree to which the improvement will take place next period, productivity levels must be measured again. This cycle thus continues for as long as the productivity program operates in the organization. The productivity cycle concept shows that productivity improvement must be preceded by measurement, evaluation, and planning. All four phases are important, not just productivity measurement or just productivity improvement. Also, this cycle emphasizes the "process" nature of the productivity issue. A productivity program is not a one-time project, but rather a continuous, on-going process (Davd, 1979).

Kaizen implementations within the organization develop important skills like, problem solving, team working, acquiring training, finding a solution independently, etc. Hence, workers become thinking workers and are more conscious about the static position. This cumulative, gradual and continues change helps to realize large step innovations by implementing BPR or benchmarking (Assefa, 2014). Assefa also argues, a re-engineered enterprise introduced dynamism and awakes the organization from its traditional position and might have acquired a culture for change and improvement which is helpful to implement Kaizen. He also claimed stating the other way round, after a radical change in the process, continuous improvement would perhaps be seen as contributing to adjustments.

Table 2. 1. Comparison of Business Process Reengineering vs. Kaizen

Items	Business Process Reengineering	Kaizen
Who leads?	Usually consultants, top management, and a cross-functional Project Team	The people that actually do the work (with strong guidance in the early years) by top management and a Sensei)
Duration	Is a "project" with a defined beginning and end	Never ending. Every sub-process should be kaizened repeatedly forever
Type of process	Re-engineering works best for processes: - has cross organizational boundaries as complex inter-relationships of variables	Kaizen works best for processes: 1. with well-defined boundaries 2. with most variables in the control of the kaizen team 3. that involve low technology - or islands
Degree of change	Changes can be incremental or radical - and usually affect an	Changes can be incremental or radical - but usually only affect a limited sub-
Speed	Generally implemented in a Big Bang changeover	Each kaizen event generates immediately noticeable and measurable
Acceptance	High risk of things reverting back to the way they were soon after the consultants leave	Since the people that actually do the work are the ones making the changes - acceptance is very high
Cost	Often involves expensive technologies, computers, and	Most "lean" changes are inexpensive or even free

Technology	Re-engineering projects are often led by computer consultants - who tend to "fix" most problems with (you guessed it) computers	Most "lean" methods minimize or even eliminate reliance on technology - with a preference toward visual methods and simplification

Source: Business Process Reengineering Method versus Kaizen Method as retrieved on February 17/2018 cristina82b@gmail.com,pdf

2.2. The Three Pillars in Kaizen

According to Imai (1986), kaizen management philosophies and practices, the three pillars of kaizen are summarized as follows: 1) housekeeping, 2) waste elimination & 3) standardization and as he stated as, the management and employees must work together to fulfill the requirements for each category. To be ensured success on activities on those three pillars three factors have also to be taken account. Those are: Visual management, the role of the supervisor, and the importance of training and creating a learning organization:

A. Housekeeping / 5s

As Schonberger (1996), housekeeping is a process of managing the work place, known as “Gemba” in Japanese, for improvement purposes. Other writer also indicates that Imai (1997), introduced the word “Gemba”, which means “real place”, where value is added to the products or services before passing them to next process where they are formed. So, for proper housekeeping, the 5s framework is used.

2.3. Kaizen Tools/ Basic Technologies to Promote Kaizen

2.3.1. 5S's

Imai (1997) described the 5S's concepts as a way of life, habits or steps for housekeeping to achieve greater order, efficiency and discipline in the workplace. It is systematic approach to workplace organization and cleaning that will transform a disorganized workplace into an efficient running machine. It focused to improve the conditions in the working area.

Ishiwata (2009) also defined the 5S's as a system of steps and procedures that can be applied to individuals and teams to arrange work areas in the best manner and condition to optimize performance, comfort, safety and cleanliness.

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

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

Sorting: - it is a process that involves selecting what you need to complete the job and removing everything else from your work area. It focuses on removing all unnecessary items from the workplace. Thus applying it workplaces will increase and increase financial income by sold the unwanted material.

Set in order:-Straightening specifically customizes your workstation and surrounding area to meet your work area needs. Arrange remaining items so they are easy to select, use, and return to their proper location. Hence it helps to use time and material effectively and efficiently in proper ways. It focuses on efficient storage and location methods. In simplest terms "a place for everything and everything in its place".

Shine: - Its Emphasis is on the removal of dust, dirt, and grime. It focuses on cleaning up the place now that all the disorder and trash has been removed. Obviously one benefit of this step is to make the workplace cleaner and brighter where everyone will enjoy working.

Standardize: - Standardizing creates a work area free of checklists; if appropriate standards are put in place it will be easier to maintain and continue improving. By implementing this we make sure that the first three steps are maintained. Japanese management concept boils down to one percept: maintain and improve standards, which help adhering to current technological, managerial, and operating standards, but also improving current processes.

Sustain: - Sustaining is the end result of how well we have performed the previous four S's Imai (1986). The idea Sustain is implementing the 5S will demand from workers the compact self-discipline connected with implementing and obeying the rules of regularity in cleaning and sorting. It leads to increasing the consciousness of staff, and decreasing the number of non-conforming products and processes, improvements in the internal communication, and through this to improvement in the human relations. It is also important to understand the need of executing the routine inspections of usage the 5S rule. This inspection is executed by helping of so called Check List and created on its basis the radar graph of the 5S, which serves to estimation of the workplace. The inspection of realization of the 5S rule is executed once a month by chosen team implementing the 5S rule – the control team (Shubhangi & Gurway, 2016).

B. Waste (Muda) Elimination

Muda in Japanese means waste. Any non-value adding activities in the process of people and machines are classified as muda in Japan. Hence, according to Imai (1997), Muda is any non value-added task. Muda elimination can be the most cost effective way of improving productivity and reducing operating costs. Imai classified seven muda (waste) in gemba and categories as: so Waste Elimination is Muda or elimination of non-value adding activities includes removing unnecessary wastes caused by people and machine.

Muda of overproduction

Is a function of the mentality of the line supervisor to be on a safe side, due to uncertainties of machine filer, rejects and absentees. It results in raw material conception before they are needed, wasteful input of utilities and manpower, additions of machinery, increase in interest burdens, additional space to store, excess inventory, added

transportation and administrative costs. As a result, trying to produce more than needed products creates misuse of raw materials, wasteful inputs of manpower, utilities, an increased burden on interest payments, added transportation, additional space needed to store excess inventory and administrative costs (Thawani, 2003 & Thessaloniki, 2006).

Muda of Inventory

Products kept in the inventory do not add any value to the organization rather they occupy warehouse space, and demanding additional facilities such as warehouses and forklift. When market test or need changes product quality get worse and may even become obsolete over night. Items in the inventory gather dust (no value added), and their quality depreciate. When an inventory level is high, nobody gets series enough to deal with problems like quality, absenteeism and machine downtime and provides little room for Kaizen. Lower inventory level however, helps to identify areas of problems and forces to deal with problems as they arise. He also asserted, when the inventory level goes down and reaches the one piece flow line, it makes Kaizen a mandatory daily activity. An excess of final product, semi-finished product, raw materials and spare parts kept in inventory contributes to Muda of inventory. They do not add value. Instead, they add to the cost of operations by occupying space, requiring additional equipment and facilities such as warehouses and forklifts. As the products stored deteriorate over time they could eventually become obsolete. As suggested by Thessaloniki (2006), Just-in-time (JIT) production systems help to solve the Muda of inventory.

Muda of Repair or Rejects (defects)

Rejects interrupt production and require expensive rework. In today's mass production environment a malfunctioning, high speed automated machine can spew out a large number of defective products before the problem is detected. Imai, further discussed, too much paperwork and many design changes will also results in a muda of reworks. Muda of repairs/rejects interrupts production. It contributes to a great waste of resources and effort. In addition, rejects increase inspection work, require expensive rework or additional time to repair (Thessaloniki, 2006).

Muda of Motion

Excessive movements by workers like walking, lifting, or carrying heavy objects, searching for lost items create waste. In short, Muda of motion is unproductive because it involves movements by workers not directly related to the job such as poor workplace organization, resulting in poor ergonomics, for example excessive bending or stretching (Mezgebe, Asgedom, & Desta, 2013). Thus, Workers should avoid walking, lifting, or carrying heavy objects that require great physical exertion because it is difficult, risky, and represents non-value added activities (Thessaloniki, 2006). Rearranging the workplace would eliminate unnecessary human movement and eliminate the requirement of having another operator to do his/her work more efficiently.

Muda of processing

At every step in which a work piece or a piece of information is worked on, value is added and sent to the next process. Imai refers here is muda of processing is modifying such a work piece or piece of information. He also mentioned inadequate technology or design and failure to synchronize process leads to muda in processing. As Suggested by Thawani (2003), elimination of Muda in processing can frequently be avoided by combining operations/steps.

Muda of Waiting

Muda of waiting occurs when the hands of the operator are ideal due to line imbalances, lack of parts or machine down time, monitoring the machine when the machine is performing value added job. The Ethiopian Kaizen manual refers muda of waiting occurs due to both ideal human and machine factors. As narrated by Thessaloniki (2006), Lead time begins when the company pays for its raw materials and supplies, and ends when the company receives payment from customers for products sold. Since lead time represents the turnover of money, a shorter lead time means better use of resources, more flexibility in meeting customer needs, and of course contributes to the lowering of operation costs.

Muda of Transportation

Though, transportation in the work place is an essential part of operations, moving materials or products adds no value stressed elimination of this muda will improve

workplace operation. Unnecessary transport of damaged materials (muda) contributes to waste because transportation does not add value to the finished product. As stated by Thawani (2003), one way of minimizing waste is by incorporating the act of any process into the main line.

C. Standardization

Standardizing work means developing standards at which production must be performed. A simpler way to think about standards is that production will be done to set specifications. In Kaizen expressions, managers should implement the standardize-do-check-act (SDCA) cycle (Imai, 1997).

Standards should be very communicative, clear and easy to understand. Regarding this during preparation and improving, it should be involved all participants of the process on the given workplace, it means direct workers. The group knows the best specificity of its own activities, and process of elaboration and after that, usage gives them possibility of understanding the essence and each aspect of the operation. In the aim of assuring all the easy access, obligatory standards should be found in constant and visible places. It is assumed that standards should not be implemented only in the typical operational processes e.g. Production, movement maintenance, storing, but also in the administrative processes, for example: book-keeping, customer service, human resources management, or secretariat service (Shubhangi & Gurway, (2016).

> *(Panka, et al, 2013**)** 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.p. 57.*

Once the standards are in place and are being followed then if there are deviations, the workers know that there is a problem. It is a never-ending process and is better explained and presented by the PDCA cycle (plan means identify aspects and impacts by implementing goals and objectives –do means implement including training and operational control measures-check means assess the measurements and reports results to decision makers and –act means decide on changes needed to improve process), known as Deming cycle, shown on figure 2.3.

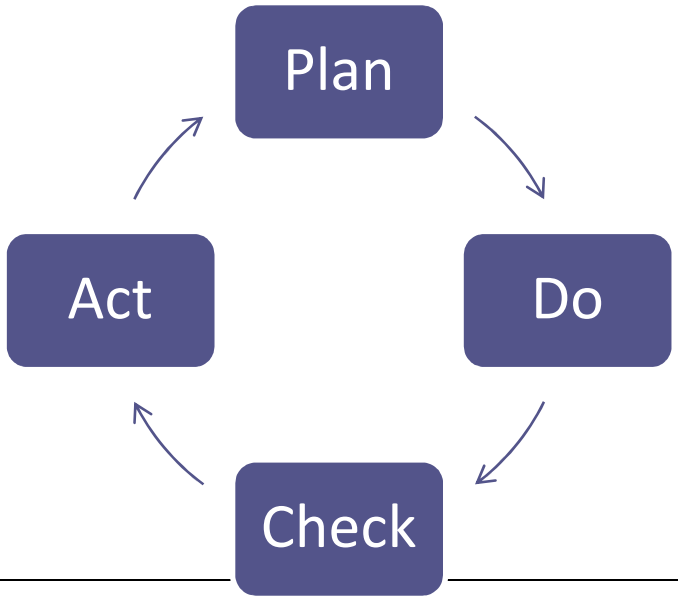


Figure 2. 3. PDCA-Plan, Do, Check and Act /Deming Cycle

Source: researcher own creation design

2.3.2. Seven quality control circle used in Continuous Improvement

One of the tools of kaizen is seven quality control circles which can assist any organization for problem solving and process enhancements. It is true that Seven QC tools are most helpful in troubleshooting issues related to quality and all processes are affected by multiple factors and therefore statistical QC tools can be applied to any process. Guru was the firs who planned seven basic tools was Dr. Kaoru Ishikawa in 1968, by publishing a book entitled “Gemba no QC Shuho” that was concerned managing quality through techniques and practices for Japanese firms. Seven quality control tools were intended to be applied for “self-study, training of employees by foremen or in QC reading groups in (Japan Ishikawa, 1968). It is in this book that the seven basic quality control tools were first proposed. These seven basic quality control tools, which introduced by Dr. Ishikawa, are : 1) Check sheets; 2) Graphs (Trend Analysis); 3) Histograms; 4) Pareto charts; 5) Cause-and-effect diagrams; 6) Scatter diagrams; 7) Control charts.

Check Sheet

Check sheets are measurements and collection of data forms the basis for any analysis, this activity needs to be planned in such a way that the information collected is both relevant and comprehensive. It is known that data are "collected and tabulated" on the check sheet to record the frequency of specific events during a data collection period. They prepare a "consistent, effective, and economical approach" that can be applied in the auditing of quality assurance for reviewing and to follow the steps in a particular process; they help the user to arrange the data for the utilization later (Montgomery, 2009), Omachonu & Ross, 2004). The main advantages of check sheets are to be very easily to apply and understand, and it can make a clear picture of the situation and condition of the organization (Kerzner, 2009). So Check sheets are efficient and powerful tools to identify frequently problems like Defect-location check sheets; tally check sheets, and; defect-cause check sheets

Histogram

It is a type of bar chart that visualizes both attribute and variable data of a product or process, also assists users to show the distribution of data and the amount of variation within a process. It displays the different measures of central tendency (mean, mode, and average). It should be designed properly for those working into the operation process can easily utilize and understand them. Also, a histogram can be applied to investigate and identify the underlying distribution of the variable being explored (Lincoln, Forbes, & Syed, 2011). Therefore, it is possible to say that Histogram Histograms showing the distribution pattern of observations grouped in convenient class intervals and arranged in order of magnitude and it is a tool to describe a sense of the frequency distribution of observed values of a variable

Pareto Analysis

Pareto Diagram is a tool that arranges items in the order of the magnitude of their contribution, thereby identifying a few items exerting maximum influence (Juran and Godfrey, 1998). It was introduced by an Italian economist, named Vilfredo Pareto, who worked with income and other unequal distributions in 19th century; he noticed that 80% of the wealth was owned by only 20% of the population. Later, Pareto principle was

developed by Juran in 1950. According to Juran and Godfrey (1998), Pareto chart is special types of histogram that can easily be apply to find and prioritize quality problems, conditions, or their causes of in the organization. The aim of Pareto chart is to figure out the different kind of "nonconformity" from data figures, maintenance data, repair data; parts scrap rates, or other sources. So it is a type of bar chart that shows the relative importance of variables, prioritized in descending order from left to right side of the chart.

Fishbone Diagram

Kaoru Ishikawa is considered by many researchers to be the founder and first promoter of the 'Fishbone' diagram (or Cause-and-Effect Diagram) for root cause analysis and the concept of Quality Control (QC) circles. Cause and effect diagram was developed by Dr. Kaoru Ishikawa in 1943. It has also two other names that are Ishikawa diagram and fishbone because the shape of the diagram looks like the skeleton of a fish to identify quality problems based on their degree of importance (Neyestani, 2017). The cause and effect diagram is a problem-solving tool that investigates and analyzes systematically all the potential or real causes that result in a single effect (Juran & Godfrey, 1998), stated that fishbone diagram is an efficient tool that equips the organization's management to explore for the possible causes of a problem). Based on the above concept it is concluded that Cause-and Effect Diagram shows systematic relationship between a result or a symptom or an effect and its possible causes. It can be concluded that fishbone diagram is an effective tool to systematically generate ideas about causes for problems and to present these in a structured form

Scatter Diagram

According to Montgomery (2009) & Oakland (2003), it is a powerful tool to draw the distribution of information in two dimensions, which helps to detect and analyze a pattern relationships between two quality and compliance variables (as an independent variable and a dependent variable), and understanding if there is a relationship between them, so what kind of the relationship is (Weak or strong and positive or negative) and the shape of the scatter diagram often shows the degree and direction of relationship between two variables, and the correlation may reveal the causes of a problem.

Flowchart

It presents a diagrammatic picture that indicates a series of symbols to describe the sequence of steps exist in an operation or process. On the other hand, a flowchart visualize a picture including the inputs, activities, decision points, and outputs for using and understanding easily concerning the overall objective through process. This chart as a problem solving tool can apply methodically to detect and analyze the areas or points of process may have had potential problems by "documenting" and explaining an operation (Lincoln, Forbes & Syed, 2011). So it is very useful to find and improve quality into process

Control Chart

Control chart or Shewhart control chart was introduced and developed by dr. Walter A. Shewhart in the 1920s at the Bell Telephone Laboratories, and is likely the most "technically sophisticated" for quality management (Montgomery, 2009), Control charts are a special form of "run chart that it illustrates the amount and nature of variation in the process over time". Also, it can draw and describe what has been happening in the process. Therefore, it is very important to apply control chart, because it can observe and monitor process to study process that is in "statistical control" (No problem with quality) accordant to the samplings or samplings are between UCL and LCL (upper control limit (UCL) and the lower control limit (LCL)). These charts separate out assignable causes. Control chart makes possible the diagnosis and correction of many productions troubles and brings substantial improvements in the quality of the products and reduction of spoilage and rework. It tells us when to leave a process alone as well as when to take action to correct trouble

Generally, this study identified that is very essential to apply all seven quality control tools for troubleshooting issues within production processes in the MSEs. All of the abovementioned quality tools should be considered and used by management for identifying and solving quality problems during producing the products and services. Thus, the production processes can be affected and improved by multiple factors of these statistical quality control too

2.4. Major Kaizen system

According to Imai (1997), A Suggestion System is the technique by which the ideas and suggestions of workers are communicated upwards through the administration hierarchy to achieve cost savings or improve product quality, place of work efficiency, working conditions; Examples range from just placing suggestion boxes in common areas, to implementing formal programs with committees reviewing ideas and rewards given for successful adoption of those ideas; It is important for management to understand the workers role in Kaizen, and to support it completely. One of the main vehicles for involving all employees in Kaizen is through the use of the suggestion system. As Imai (1997) explained that the suggestion system does not always provide immediate economic payback, but is looked at as more of a morale booster. Morale can be improved through Kaizen activities because it gets everyone involved in solving problems.

2.5. Total Quality Management

Lillrank & Kano (1989) described that, total quality management means organized Kaizen activities involving everyone in a company –managers and workers– in a totally systemic and integrated effort toward improving performance at every level. It is to lead to increased customer satisfaction through satisfying such corporate cross-functional goals as quality, cost, scheduling, manpower development, and new product development. In Japan, TQM activities are not limited to quality control only (Lillrank & Kano, 1989).

It is understood from kaizen concept point of view, TQM activities are not limited to quality control only. Elaborate system of kaizen strategies has been developed as management tools within the TQM approach. In kaizen TQM is a movement aimed at improvement of managerial performance at all levels.

According to Lillrank and Kano (1989), Total Quality Control (TQM) is a general term for a management orientation that sees quality, defined as customer satisfaction, as its leading principle and applies systematic efforts and scientific methods to this end. The concept of quality has expanded from a narrow specialization within production engineering to become a general management concept. Quality is made the leading principle for all echelons and all functions within a company. The core belief is that

customer satisfaction will in the long run benefit the company and result in good overall performance and profit. From point of this view, TQM manager is more worried about the number of customer complaints than about the company stock price or return of assets.

2.6. Total Productive Maintenance

Total Productive Maintenance (TPM) is a maintenance program, which involves a newly defined concept for maintaining plants and equipment. According to venkatesh (2007), the goal of the TPM program is to markedly increase production while, at the same time, increasing employee confidence and job satisfaction. TPM brings maintenance into focus as a necessary and vitally important part of the business. It is no longer regarded as a non-profit activity. Down time for maintenance is scheduled as a part of the manufacturing day and, in some cases, as an integral part of the manufacturing process. The goal is to hold emergency and unscheduled maintenance to a minimum (venkatesh, 2007) and TPM was introduced to achieve the following objectives. Avoid wastage in a quickly changing economic environment; producing goods without reducing product quality, Reduce cost, Produce a low batch quantity at the earliest possible time and Goods send to the customers must be non-defective.

2.7. Similarities and differences between TQM and TPM

According to venkatesh (2007), the TPM program closely resembles the popular Total Quality Management (TQM) program. Many of the tools such as employee empowerment, benchmarking, documentation, etc. used in TQM are used to implement and optimize TPM. The similarities between the TQM and TPM are; Total commitment to the program by upper level management is required in both programs, Employees must be job responsibilities must take place as well.

Table 2. 2 Similarities and differences between TQM and TPM:

Category	TQM	TPM
Object	Quality (Output and effects)	Equipment (Input and cause)
Mains of attaining goal	Systematize the management. It is software oriented	Employees participation and it is hardware oriented
Target	Quality for PPM (Production process mgt)	Elimination of losses and wastes.

Source: Venkatesh (2007). Retrieved from (ven_hal@yahoo.com), on April 15/2018.

Generally, total quality control is an organized activity involving everyone (from managers to workers) in a totally integrated effort towards kaizen at every level. It is equivalent to Company-Wide Quality Control (CWQC).

2.8. Small Group Activities

Empowered to initiate corrective action, and a long-range outlook must be accepted as TPM may take a year or more to implement and is an ongoing process. Changes in employee mind-set toward their

A kaizen strategy includes small group activities informal, voluntary, intercompany groups organized to carry out specific tasks in a workshop environment. The most popular type of small- group activity is quality circles. Designed to address not only quality issues but also such issues as cost, safety, and productivity, quality circles may be regarded as group oriented kaizen activities. Quality circles have played an important part in improving product quality and productivity in Japan. However, their role often has been blown out of proportion by overseas observers, who believe that these groups are the mainstay of quality activities in Japan. Management plays a leading role in realizing quality in ways that include building quality assurance systems, providing employee training, establishing and deploying policies, and building cross -functional systems for QCD. Successful quality-circle activities indicate that management plays an invisible but vital role in supporting such activities (Henok, 2016).

2.9. Goals of Kaizen vs. Quality, Cost and Delivery

As Imai (1997), in a market economy, the customer is king, and satisfying customers' expectations for products and services in terms of Quality, Cost, and Delivery (QCD) should be the ultimate goal of every business. So the ultimate goal of Kaizen strategy and activities aim at improving Quality, Cost, and Delivery (QCD), thus QCD target has become a top priority for survival in business. A market sensitive company must have a strong dissatisfaction with its status quo on existed QCD status. It should review its current competitive position on that and its strengths and weaknesses and take into account the changing environments and consumer behaviors. A company that is happy with the status quo is not qualified to stay on market, so it should answer the following questions the soonest possible:

To do the above, one of the best ways is to motivate and challenge its employees, to set clear targets with numerical values and a deadline to achieving such a target. On the targets must be involved activities improving quality during each process in terms of organization's internal customers until the process ends with external customers.

Quality runs throughout the process from purchasing, developing, designing, producing, selling, distributing, and servicing the products or services. According to Imai jobs of developing a new product or service, or designing a new process, always start with paperwork or blueprints. The Japanese management team uses the quality assurance system diagram or Quality Function Deployment (QFD) as a powerful tool. Quality is followed by cost effectiveness, which refers to the overall cost of designing, producing, selling, and servicing the product or service. According to Imai, cost reduction in work place does not mean cost cutting. It is about cost management. The cost management teams oversee the process of developing, producing, and selling products or services of good quality while retaining a lower cost. A huge waste of resources can happen in the way a product is designed, made, and sold. The current business competition for quality and cost is intensifying Thus, improving quality while reducing cost is the only option for survival. Cost reduction should come as a result of better cost management. The key is to build a management system that reduces cost while achieving quality. Cost management encompasses a wide spectrum of activities including: cost planning to maximize the

margin between costs and revenues, overall cost reduction in Gemba by eliminating muda (waste). Cost reduction through waste elimination can be done with the methodologies based on waste elimination discussed before. Cost reduction is not synonymous with cost cutting. Reducing cost by firing employees, restructuring, and harassing suppliers will invariably disrupt the process of quality and usually ends in quality deterioration.

Delivery on the other hand, means delivering the requested volume in time, such as practicing a just-in-time production system. Delivery could be part of quality of product or service. So any diverge from prescribed standards can hurt the quality as well. Management also encompasses such activities as policy deployment, standardization, training and education. Where training is concerned, most companies today have the tendency to put too much emphasis on teaching knowledge. In Kaizen, group learning places great emphasis on improving the fundamental values that are derived from common sense, self-discipline, order, and economy. Quality, Cost, and Delivery are closely related subjects (Imai, 1997, Pp. 45-57).

2.10. Potential Advantages and Disadvantages of Kaizen

Advantages of kaizen

Kaizen, by encouraging the development of smaller, self-managing groups, consolidates team-working, increases on-the-job training potential and leads to a greater understanding of change and cooperation in the workplace. The employee suggestion system is an integral part of the Kaizen management framework that helps to formally recognize employee efforts, offers workers a worthwhile role in company development and ultimately improves involvement in work. Kaizen, as a lean thinking approach, involves identifying human activities that absorb resources but add no value (muda, or waste) ultimately facilitating the correction of problems in the workplace and adding value Generally, kaizen increased efficiency, employee satisfaction and improved safety (Nancy,1998).

Disadvantages of kaizen

Kaizen signals a permanent change of management system. Once implemented it is hard to return to previous management systems should the need or desire arise. Also, since Kaizen is intertwined with Japanese culture, it may be difficult to apply in other cultural contexts.

Kaizen can increase the burden on lower level management as they not only have to spend time on the shop floor (the front line) facilitating the implementation of the approach, but they may also have to work after hours to complete their routine administration task.

Kaizen can lead to diminishing returns. The continuous improvement approach leads to a focus on smaller and smaller details with lower potential returns, without a concurrent reduction in effort. Some companies are required to bring about a massive change in their mind set and style of functioning. Sometimes this is very difficult and the initial problems created can very badly effect the business overall. For instance, in order to put this management style into practice, companies are required to have a very open style of communication. Also, many working employees think very territorial and are hesitant to let go of 'their' work areas. Generally, when using a new management style the initial excitement dies down all too soon. At the end, companies are not able to get the results they expected. But, it makes people believe that this management style will not work at all (Latest, 2017).

2.11. Requirement of Kaizen in Addis Ababa

According to Berhanu (2014), there are many reasons why kaizen was developed in Japan transformation in the East Asia and Africa including Ethiopia recently. One reason is that, After the Second World War Japanese private associations played a very important role in disseminating quality and productivity improvement (Kaizen) technology (including techniques and skills) widely to Japanese industrial sector according to (Ethiopian Kaizen Institution (EKI), 2016). As widely known, kaizen is continuous improvement and very much important to increase productivity especially in the area of manufacturing sector. So number of manufactures sectors is concentrated in Addis Ababa. For that reason, kaizen is needed to Addis Ababa in order to increase productivity especially in manufacturing area by eliminating wastages.

From the above two photographic displays, we understood that before the implementation of kaizen in the workshop as shown in the above large surface area was covered by unordered, scattered tools and important materials are overlapping each other and covered by wastages. But After implementation of kaizen, the tools are well ordered and settled in their variety and volume of the tools. Thus, the working shop is clear and attractive for work environment besides that it saves time for training by searching material from disordered and so on. Because of this, we concluded that productive increase in both quality and quantity.

2.12. Role of Addis Ababa Kaizen Institute

Addis Ababa Kaizen institution (AAKI) established in 2016 by the council of Ministers Regulation No. 77/2016 (Addis Ababa Kaizen institution AAKI, 2016). The objective of the institution is, to carry out broad-based activities of on-going quality and productivity improvement and thereby enhance the expansion of competitive industries. The institute shall have the roles, power, and responsibility:

1. Formulate strategy and plan that assist in the dissemination of the KAIZEN concept and tools and implement same upon approval;
2. Create citywide quality and productivity movement that could enable to effectively implement government policies and strategies;
3. Prepare, and distribute Kaizen training and consultancy manuals customized to micro, small, medium and large enterprises and follow up their applications; etc (AAKI, 2016).

Role of Addis Ababa kaizen institute

(Ethiopian kaizen institute (EKI), 2016) established in 2016 by the council of Ministers Regulation No. 77/2016. The objectives of the institution to carry out broad-based activities of continuous quality and productivity improvement of institutions under the city government so as to provide prompt and effective service; on-going quality and thereby to make them completive through enhancing product and productivity.

2.13. Hierarchy of kaizen

A kaizen organizational structure or hierarchy is the foundation on which kaizen is implemented in a firm. A kaizen hierarchy is set of rules and policies that determine. Depending upon an organizations needs, there are different kaizen organizational hierarchies that can be used, but the kaizen hierarchy structure is the most popular

Figure 2.4. Hierarchy of kaizen

Source: https://ocio.wa.gov/news/heck-kaizen-kaikaku-your-hierarchy.

2.14. Overview of Ethiopian Micro and Small Enterprise

2.14.1. The Vision of MSE development:

The vision of the sector is to see "reliable and broad-based competitive sector for the industrial development created".

2.14.2. Major objectives of MSE development

1.) Through creating job opportunity, improve the income of the society and poverty reduction and ensure equitable wealth distribution, overview of Ethiopian.

2.) Enabling the sector to be competitive and witnessing fast and sustainable growth, supporting the development &maintaining of the rural development and lay the foundation for industrial development.

3.) Expanding the sector's development in the urban areas by creating developmental investors.

Federal Micro and Small Enterprises Development Agency

FEMSEDA on the other hand put the definition of Micro and Small Scale Enterprises and categorize them from support provision perspective which condescension Medium Enterprises. With these precincts in defining and characterizing Micro, Small and Medium Enterprises in Ethiopia, adopting definition of MSMEs with slight modification is compulsory. To have uniform and consistent definition at least between different agencies and share similar concepts with international organizations and making accessibility of uniform data for the sector easy, adopting (Tom & Vander, 2008), SMEs definition may be unwise since they discussed it as a single category without aligning it with Micro Enterprises. However, since there are international organizations that consider MSMEs, researchers believed that adopting international definition with slight modification considering the economic status of the country is logical.

MSEs Development Strategy, Provision Framework, and Methods of Implementation (2011-2015)

According to MoFED (2013), to alleviate the implementation gap of the first MSEs development strategy, another MSEs development strategy is designed for the period 2011 to 2015. Although the strategy has considered other nations' experience of defining Micro Small and Medium Enterprises (MSMEs) and give the focus for these three, it did not consider the Medium enterprises in the category as the focus is Micro and Small Enterprises only. The new strategy solved some of the limitations the predecessor has (especially regarding the definition base that was not included). The new strategy has also considered the total asset as one of the bases for defining the Micro and Small Enterprises that still makes the deflation susceptible to inflation and defilation. In the second strategy, the focus which emphasizes Agricultural Development Leads Industrialization strategy is seemingly shifted to "industry" which really focuses on facts on the ground as most of the Enterprises established are manufacturing. Nonetheless, the medium Enterprises are technically overlooked from the MSEs category though the strategy has included a phrase that state "an enterprise is said to be transformed from small to medium level of growth when it enabled to be competent in price, quality, and supply (Amare, 2017).

Growth and Transformation Plan II (GTP II) (2015/16-2019/20)

According to the GTP II projection, the share of the manufacturing sector in GDP is expected to show a fourfold increase from 4.8 % in 2014/15 to 18 % by 2025. From this projection the share of Micro and Small Enterprises in GDP under base scenario in percent is stated as 1.1 in 2014/15 to 1.8 by 2019/20 with an average contribution of 1.4 in 2015/16 to 2019/20 and the projection is also made for Medium and Large scale enterprises as 3.7 in 2014/15 to 5.9 in 2019/20 with average share of 4.9 in periods 2015/16 to 2019/20. Though the plan has tried to project the contribution of Micro and Small; and Medium and Large Enterprises to GDP, the entire projection is made only for manufacturing that overlooked the service sector MSMEs. This indicated that the budget allocated by the government to these MSMEs increased from time to time, Because this sector play a significant role to poverty reeducation and create job opportunity (Amare Abawa Esubalew,2017).

2.14.3. Ethiopian Micro and Small Enterprise Development Strategy

With regard to Gebrehiwot & Wolday (1997), development strategy was reviewed and revised in response to urgently growing needs prevailing in the country. The revised micro and small enterprises development strategy in Amharic version was formulated in 2010 and officially endorsed by the cabinet in January 2011. The revised MSEs strategy involved the whole planning exercises including situation analysis, review on relevant development policies related to the sub-sectors, analysis of currently available means of interventions, formulation of revised strategy including re-defining MSEs, discussion of micro and small enterprises contribution toward national economy, setting up updated policy directives and targets as well as institutional framework and supporting mechanism and schemes, and budgetary arrangements. In so doing, five countries were benchmarks for the study including India, Malaysia, the Philippines, Indonesia, and Japan. On the strategy, among various findings and policy recommendations made, micro and small enterprises are re-defined (Yodit, 2015).

Table 2.3. New Definition of Micro and Small Enterprise

Term	Sector	Capital	No. of person
Microenterprises	Industry	Not exceeding Birr 100,000	≤ 5
	Service	Not exceeding Birr 50,000	≤ 5
Small-enterprises	Industry	Birr 100,001 to Birr 1,500,000	6 to 30
	Service	Birr 50,001 to Birr 500,000	6 to 30

Source: Former MOTI, Revised Micro and Small Enterprises Development Policy and Strategy (draft)

The study further suggested the development scenario of MSEs by attempting to broadly categories MSEs into three groups:

(A). Start-up, (B) Growth, and (C**)** Maturity, in accordance with various aspects of capabilities of human resources development, infrastructure facilities and development, financing, information management, marketing, and technological research and

development. The revised strategy presents the sequential scenario to bring up MSEs from start-up state to growth expecting that MSEs at the stage of maturity may enter into a category of medium and large companies for further growth scenario. To assist MSEs in this development scenario, the revised MSEs development strategy attempts to articulate supporting schemes including governance system and roles demarcation among public agencies including MOE, TVET, National Bank and other stakeholders, monitoring system, legal framework relating to business registration and licensing as well as procedures and mechanism to assess financial skill development and upgrading, management consultancy skill, marketing supports, clustering and incubating supports, technological development support, information management support, institutional capacity building support as well as women and youth support. The revised strategy attempted to categories MSEs in terms of the type of businesses or sub-sector of industries (Henok, 2016).

Table 2. 4. Categories of Prioritized MSEs in Terms of Type of Industry

No	Group	Sub-sector
1	Manufacturing	1. Textile and apparel. 5. Leather Goods. 2. Agro-processing 6. Electrical and electronics. 3. Metal Engineering 7. Packaging and 4. Woodworking 8. Food and beverage.
2	Agri-business	▪ Urban agriculture linked with processing. ▪ Modern commercial poultry linked with processing. ▪ Modern commercial animal husbandry linked with processing. ▪ Apiculture linked with processing. ▪ Modern animal feed processing.
3	Construction	o Rural road works. o Low-cost housing construction. o Production and supply of construction materials.
4	Trade	Local products wholesale. Raw materials suppliers to MSEs. Exclusively local products retail shops.
5	Service	➢ ICT. ➢ Maintenance support for the strategic industries. ➢ Eco-tourism. ➢ Cooperative based resort. ➢ Low-cost rural transport. ➢ Storage container and packaging services.

Source: Former MOTI, Revised Micro and Small Enterprises Development Policy and Strategy (draft).

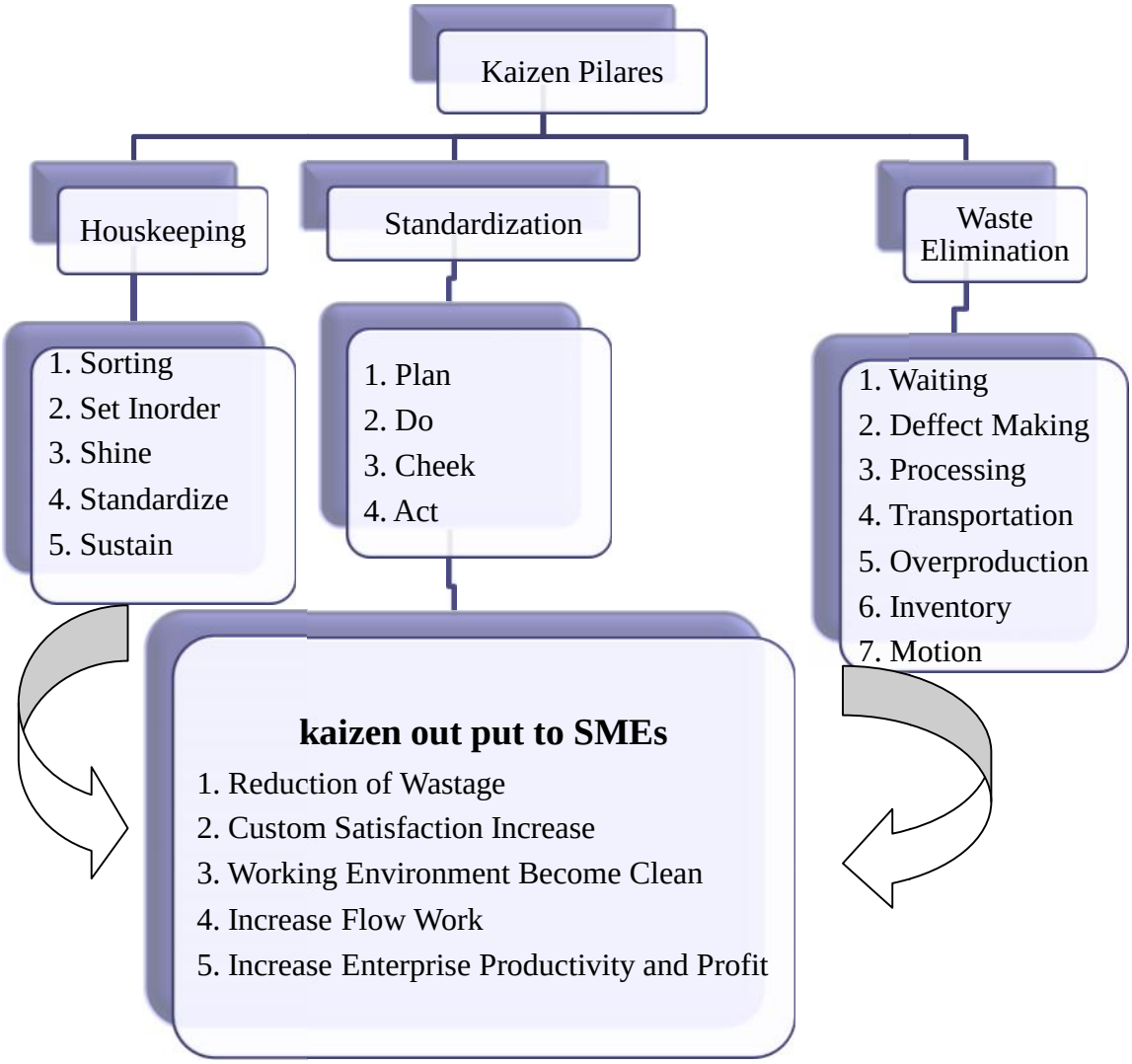
2.15. Analytical Framework

Kaizen is a system of a continual undertaking by an organization to improve its business activities and processes with the goal to always improve quality of products and services so that the orll customer satisfaction. Kaizen can be built in and run with an integrated and company-wide approach through the collaboration of all the levels of the organization that are top management, middle managers, and front-line employees. Commitment, genuine participation, and motivation of all the three actors are critical factors. Kaizen normally places the foremost importance in improvements at the front-line workplaces as the foundation of all the improvement efforts.

According to EKI (2016), Kaizen is contained three pillars which are kaizen tools, kaizen systems, and kaizen philosophy. Kaizen tools that are like 5s, kaizen board 7cc important to implement kaizen, kaizen systems are an integral part of an established management **sy**stem that aims at involving employees in Kaizen. Kaizen improved productivity and quality, better safety, faster delivery, lower costs and greater customer satisfaction; Furthermore, employees find work to be easier and more enjoyable resulting in higher employee morale and lower turnover. Outcomes include Reduction in waste in areas such as inventory, waiting times, transportation, worker motion, employee skills, overproduction, excess quality, and in-processes, Improvement in space utilization, product quality, and use of capital, communications, production capacity, and employee retention, and immediate results. Instead of focusing on large, capital-intensive improvements, Kaizen focuses on creative investments that continually solve large numbers of small problems.

The real power of Kaizen is in the on-going process of continually making small improvements that improve overall processes and reduce waste. Kaizen will reduce costs, space requirements and cycle time. Of course, since it is continuous, as soon as one set of problems are solved, new problems occur which must be overcome; By going through this process, the production system becomes stronger and stronger (Henok, 2016).

Figure 2. 5. Analytical framework



Source: Researcher Creation Design, 201

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1. The Research Approach and Design

The research approach for this study is a mixed approach, both quantitative and qualitative; integrating different types of data in the same study, collecting diverse types of data best provides an understanding of a research problem (Creswell, 2009).The research design in the study was descriptive survey design as the purpose of the study was to investigate the practice and challenges current implementation of KAIZEN system in SMEs. As a descriptive design deals with assessing the current state of affairs of a phenomena or situation (Kothari, 2001), it is appropriate to this study.

3.2. Sources of Data

Both primary and secondary sources of data were used for this study. The Primary source of data was obtained from Kaizen institutes, Enterprise owners/operators, TVETs Deans/Vice-Deans and Micro and Small enterprise office. Secondary data were obtained forms books, journals pamphlet/brochures, thesis papers and documents from the kaizen institute and TVET bureau

3.3. The Study Area Profile

Addis Ababa is one of the oldest and largest cities in Africa, established in 1886 (Dawit, 2014). It's located at in the center of Ethiopia, at an average altitude of 2500 meter above sea level making it one of the highest. It has over three million populations**.** The city has been playing a historic role in hosting the regional organizations such as the AU, and (Yodit, 2015). In recent years, along with many development activities, there were several achievements in the educational sector, specifically; the city has shown a significant leap in the number of the TVET colleges, 33 Public, and 103 Private Colleges, and 8 Colleges established by NGO‟s, making them a total of 154 (Dawit, 2014). Currently, the numbers of public Poly Technique Colleges found in Addis Ababa city are six. This research study is focusing on only one specific section of the TVET training, which is the "practice and challenges in the application of kaizen in Addis Ababa TVET

supported manufacturing MSE sector". The focus area of this research is mainly on the two Sub-cities namely "Arada sub-cities which contains these MSEs that are kaizen supported by Aware TVET institute and Arada manufacturing colleges and Yeka sub-cities which consists these MSEs that are kaizen supported by Misrak polytechnic colleges, kotebe TVET institute, and ferensay TVET institute".

As we can see from the table, the researcher purposively selected Yeka and Arada Sub-City among the ten sub-cities in Addis Ababa. TVETs which found in Yeka sub-city are, Misrak Polytechnic College, Yeka Industrial College, Kotebe TVET institute, Ferensay TVET institute, and Addis Rai TVET institute support kaizen to be applied in MSEs. Among these TVETs, Misrak Polytechnic College, Kotebe TVET Institute and Ferensay TVET institute included in the study.

Similarly, TVETs which found in Arada sub-city are, Arada Manufacturing College and Aware TVET Institute both are included in the studying area. So these TVETs are that supporting kaizen to be implemented in the manufacturing enterprises.

3.4. Sampling Design

The aim of the study was to assess the practices and challenges in the application Kaizen at Arada and Yeka Sub-city in selected manufacturing MSEs; the researcher used simple random sampling (Simple random sampling is the basic sampling technique where 32 SMEs samples were selected for study from 324 SMEs. Each enterprise is chosen entirely by chance ("Pick a number out of a hat!") and each member of the enterprise has an equal chance of being included in the sample) technique for conducting the quantitative study, and purposive/judgmental sampling (Purposive sampling is useful in these instances because it provides a wide range of non-probability sampling techniques for the researcher to draw on) techniques for undertaking the qualitative aspect of the study. The researcher first purposively selected Yeka and Arada Sub-City among the ten sub-cities in Addis Ababa. According to Kumar (1999), the size of the sample determined by the population; based on this statement, the sample TVET which supported kaizen to MSEs from Yeka sub-city, Ferensay TVET institute, Kotebe TVET institute and Misrak Polytechnic College were selected randomly. Similarly, Aware TVET institute and Arada manufacturing colleges were selected purposively from Arada sub-city. Next, 16 sample

Enterprises out of 165 Enterprises from Aware TVET and Arada manufacturing college and 16 Enterprises out of 159 enterprises from Ferensay TVET, Kotebe TVET, and Misrack polytechnic college were selected.

According to Mwania et al (2016), in a descriptive research, a sample size of 10-50% is acceptable; because of this the sampling design for this studying is limited to 10%; the other reason is the strategy of Kaizen implementation by the government and the type of support provided by TVET colleges for all SMEs are the same. First garment, leather product and metal/wood were selected through stratified sampling since the selected sector is heterogonous; Based on this, 32 respondents were selected from the total of 324 SMEs through SRS. 4 enterprise owners from textile/garment, 25 enterprise owners from wood/metal work, and 3 enterprise owners from leather products were selected. The interviews were administered on the sample of 13 SMEs relevant stakeholders (5 TVET kaizen coordinators, 2 Sub-city SMEs officials, 1 AAKI kaizen coordinators and 5 TVET deans). These numbers of interviewees were selected because of related responses from majority of respondents.

Table 3. 1. Summary of sample of respondents

No	Sampling respondents		Target population	Sampling population	Sampling technique
1	TVET coordinators		8	5	SRS
2	Sub-city SMEs officials		2	2	Purposive sampling
3	AAKI coordinators		1	1	Purposive sampling
4	Deans/vice deans		8	5	SRS
5	SMESs owners	textile	41	4	SRS
		Leather product	31	3	SRS
		Metal/Wood	252	25	SRS
Total			324	32	SRS

Source: researcher survey, 2018

3.5. Data Collection Methods

Data gathering tools essentially, both quantitative and qualitative data were employed in the study for the understanding of the complete picture of the implementation of the kaizen in Arada and Yeka sub-city manufacturing micro and medium small enterprises. It needs to apply appropriate data collection instruments. The instruments used to gather data were a questionnaire, interview and document analysis with respect to (Kumar, 1999) stated that employing different data collection instruments help the researcher to combine, strengthen and amend some of an inadequacy of the data.

Accordingly, questionnaires were used as the main data gathering instruments were structure interview and document analysis were used to enrich the data obtained through questionnaire.

Questionnaire

The questionnaires were designed in a self-administered format to enable the respondents to fill the answers by their own (Dawson, 2002). In this study, semi-structured interviewers, questionnaires are used to develop seek ideas related to the research objective from respondents. A pre-test using the questionnaire was conducted. The questionnaires can be detailed and help to cover many subjects or issues can be easily and quickly analyzed once the field data gathering work is completed. In the case of closed-ended questionnaires item rating scales like range from 1(very high) to 5(very low), 5 (from strongly agree) to (strongly disagree) and the like based on the questions were used. This instrument were preferred for the reason that, they provide more flexibility to the respondents and offered greater accuracy in recording their view on a given subject. A rating was a measured judgment of some sort. While opened-ended questionnaires used for respondents to explain their feeling and understanding freely as much as possible

Table 3. 2. Selected sectors

Sectors	Sex		No. of Selected Respondents
	Female	Male	
Textile/Garment	2	2	4
wood/Metal Work	1	25	25
Leather product	1	3	3
Total	4	28	32

As we can see from the above table 3.3., four Textile/Garment, twenty-five wood/Metal Work and three leather products were selected for the studying.

Engaged Questionnaires Respondents Sectors

To facilitate effortlessness in conducting the empirical analysis, the results of descriptive analyses were presented. Thirty-two (32) questionnaires were distributed across Arada and Yeka sub-cities specifically in the manufacturing sector. All questionnaires were completed, representing 100 % response rate. Out of the 32 questionnaires administered 7 were distributed to textile/ garment, and leather product and 25 for wood and metal works

Table 3. 3. Sectors Respondents engaged

Sector	Total Distributed Questioners	Respond Questioners	Percent
Textile/Garment	4	4	100%
wood/Metal Work	25	25	100%
Leather product	3	3	100%
Total	32	32	100%

3.6. Pilot-testing of the study

A Preliminary survey questionnaire was constructed by taking randomly ten Enterprises at the office at Yeka and Arada sub-city TVET kaizen supported Micro small enterprise. This means that the research preliminary questions tested to see whether or not the study required. The preliminary survey used as a basis for formulating research problems and precise questions. Based on the above statement I asked ten enterprise agents to see if

there are any ambiguities which remained unnoticed. Once this has been done, the questions changed accordingly and included these questions to the types of people who would be participating in the main survey.

Based on a preliminary survey made for this study, it was observed that SMEs' owners have quick return expectation after implementing KAIZEN, which is not easily materialized. Although KAIZEN improves efficient use of materials and quality products, high wastage of materials and low quality products was observed in SMEs as a result of poor commitments of supported enterprises to apply kaizen philosophy

Data Processing and Analysis

In the data processing procedure, editing, coding, classification and tabulation of the collected data were used. Descriptive analysis was used to reduce the data into a summary format by tabulation (the data arranged in a table and chart format) and a measure of central tendency (mean and standard deviation). Moreover, pie charts and bar charts were used to describe the general characteristics of enterprises. The reason for using descriptive statistics was to explain practice and challenges in the application of kaizen. Besides, the interview questions were analyzed using descriptive narrations. The Statistical Package for Social Science (SPSS) version 24 used to analyze the data obtained from primary sources, specifically, descriptive statistics (mean, standard deviation and charts).

3.7. Reliability Test

As Nigussie (2018), indicated that General Guidelines for Interpreting Reliability Coefficients Interpretation Reliability (r) were: ≥ 0.90 Excellent, $0.80 \leq r < 0.90$ is Good, $0.70 \leq r < 0.80$ is Acceptable Good, $0.60 \leq r < 0.70$ Borderline Acceptable, $0.50 \leq r < 0.60$ Low Borderline, $0.20 \leq r < 0.50$ Unacceptable Low and $0.00 \leq r < 0.20$ Unacceptable. A satisfactory level of reliability depends on how a measure is being used

For the purpose of measuring the internal consistency of the scales, Cronbach's alpha coefficient of correlation is used. The reliability of respondent questionnaires determines the consistency of instruments according to (Creswell, 2009), regard as the reliability of the instruments as the degree of consistency that the questionnaires are good or not. The

reliability of a standardized test is usually expressed as a correlation coefficient, which measures the strength of association between variables. Such coefficients vary between -1.00 and +1.00 with the former -1 showing that there is a perfect negative reliability and the letter +1shows that there is perfect positive reliability.

In this study each statement of questions of respondent rated on a 5 point likert response scale which includes (very poor, poor, fair, good and very good), (Very Low, Low, Average, High, and Very High.), (Strongly disagree, Somewhat disagree, agree, Somewhat agree and strongly agree). Based on this an internal consistency reliability test was conducted in Arada and Yeka sub-cities with a sample of 10 kaizen operators in SMEs of the manufacturing sector and the Cronbach's alpha coefficient for the instrument was found as shown in table 4.3 below which is reliable. Typically an alpha value of 0.80 or higher is taken as a good indication of reliability, although others suggest that it is acceptable if it is 0.67 or above (Creswell, 2009). So we can understand that the alpha value of less than 0.67 is not as such acceptable. Therefore, instruments were developed based on research questions and objectives; it is likely to gather essential data from respondents. Then, instruments are consistent with the objectives of the practice and challenges in the application of kaizen.

Table 3. 4. Reliability Statistics

Reliability Statistics		
Items	Cronbach's Alpha	N of Items
5s Factors	0.882	5
Standardization Factors	0.901	4
Waste reduction Factors	0.847	7
Quality Related Factors	0.842	6
Labor-related factors	0.91	4
Working Time-Related Factors	0.955	4

Generally, those items which are included in the questionnaire to measure different aspects of the stakeholders and kaizen operators to the implementation of kaizen strategy in Arada and Yeka small micro enterprises to know internal consistency and reliability.

Key informant interview

An interview schedule with a list of open-ended questions was prepared to corroborate the evidence obtained from the questionnaires and obtain further information. The advantages of this approach include, it enables getting more detailed information, provides flexibility to restructure the questions, and non-response is generally low (Neville, 2007). It also helps to focus on the research area and allows a standard way of approaching all the interviewees (Dawson, 2002). The open-ended questions also offer participants more flexibility to raise issues they think appropriate with sufficient details.

According to Kumar (1999), ensures comparability of the data which is kaizen success indicators and kaizen challenge indicators; In order to criticize the data obtained through questionnaire, structured interviews were conducted with five TVET college deans, five TVET kaizen coordinators/supervisors, Two Small microenterprise office and one Addis Ababa Kaizen institute coordinator/supervisors. For these, interview guides (a written list of open and /or close-ended items) were prepared by the researcher and presented for the above key informants/stakeholders in face to face interaction. Based on the above interviews, the stakeholders on January, 2018 explained in one way or in other ways the following issues; as indicated in the interviews, success indicators and challenge indicators were explained by these interviewers. Based on this, Kaizen is a low-cost approach to productivity improvement for as they reasoned out. First, "it is well known that kaizen does not require massive capital investment & expensive technology since it seeks to use existing equipment and human resources in a more efficient and less wasteful. Second, the key goal of kaizen is to generate the internal capability of the enterprise and create a good working environment, kaizen is particularly suited for enterprises in low-income countries which face financial access problems like Ethiopia. But in the implementation phase of kaizen, some problems were faced like poor perception of an enterprise about kaizen, unmotivated of kaizen supervisor, the poor coordination of stakeholders, lack of consecutive training were some challenges for implementations of kaizen in Small and microenterprise specifically in the manufacturing sector."

Data Collection Procedures

To describe the "practice and challenges in the application of kaizen" Arada and yeka sub-city in small and microenterprise manufacturing sector: first, questionnaire and structured interview were developed based on the research questions. Finally, instrument was developed and used for the purpose. The questionnaires were designed for SMEs owners. In addition, the interview was constructed with the Deans and Vise Dean, TVET kaizen coordinators, SMEs officials and AAKI coordinators. After finalizing the instruments the researcher distributed the questionnaires to the respective respondents of the sample areas giving adequate orientation about the purpose and how to fill them. In each TVET college, Deans /Vise Dean, TVET kaizen coordinators, SMEs officials and AAKI coordinators, there was a representative to facilitate the data distribution, clarification and collection to and from the respondents. Then, constant follow up were made by the researcher through face to face and telephone with questionnaires and interviews to minimize communication breakdowns. Finally, the instruments were collected by the researcher from each college and enterprise for analysis.

3.8. Methods of data analysis

The analysis method for this paper was done by assessing the practice and application of kaizen implemented in the selected manufacturing sector. There are two main types of data that was utilized for data-collection of the thesis; the Quantitative and Qualitative data. The quantitative data were coded and entered into IBM "SPSS" statistics version 24 software was used for the purpose of analysis, Microsoft Excel and then analyzed by using descriptive statistical tools such as the table, graphs or charts, and percentage while the qualitative data was analyzed through cross-tabulation or triangulation.

A total of 45 questionnaires were distributed to the sample respondents. However, only 45 questionnaires were completely filled in and returned to the researcher which made the response rate of about 100 %. Thus, this rate may allow the researcher to further data analysis. Data collection in study method concurs with data analysis (Birhanu, 2014). Those major data collection methods used in this study were qualitative and quantitative which were Semi-structured and structured interviews and questionnaires were used; that

is interview guide; observation checklists; and documentary analysis template respectively.

After the completion of the data collection from 32 small and micro enterprises (such as furniture making, textile, leather product and metalwork, including stakeholders such as kaizen institute, TVETS deans/vice deans. micro office and TVET kaizen coordinators), the researcher checked and verified the completeness of data for those questions in the questionnaires and other tools of qualitative data collection. Then, the quantitative data were entered into a computer using latest Data View template of IBM SPSS Version 24 and cleaning was done to maintain accuracy and internal consistency before any statistical test was run. The results of the data analyses were presented using descriptive statistics, such as frequency tables, graphs, pie charts, figures, mean and standard deviation consisting frequencies and percentage.

Ethical Considerations

It is obligatory to write and follow ethical measures for qualitative research to be used as guidelines. The researcher tried to establish good relationships with all the interviewees because the selection of potential and appropriate people played an important role in the reliability of the qualitative data generated. Those informants in this research first gave their informed consent to participate in the semi-structured interviews and observations. Furthermore, interview questions were 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. As the researcher could not able to conduct the research successfully if other people had not helped in the process of undertaking data collection, it was expected them to give up their valuable time to help us which, in turn, it followed that the researcher should offer them something. Those key informants were willing to disclose a lot of personal information during the actual research process.

CHAPTER FOUR

4. DATA PRESENTATION AND ANALYSIS

This section of the study presents the results of the study. The background of respondent's is presented followed by the resulted of the analyzed data through tables, charts and graphs

4.1. Demographic Characteristics of Sample Respondents

Distribution of sample Respondents by Sex and age

The objective of this section is to assess the background of the respondent's respect to educational status and day of establishment.

Table 4. 1. Distribution of sample Respondents by Sex and age

No	Item		Respondents (N=45)									
			TVET coordinators N=5		MSEs officials N=2		AKI N=1		Dean/ Vice-dean N=5		MSEs Owners N=32	
			F	%	F	%	F	%	F	%	F	%
1	Sex	Female	2	40	-	-	-	-	1	20	4	12.5
		Male	3	60	2	100	1	100	4	80	28	87.5
2	Age	20-30	1	20			-	-			15	46.9
		31-40	1	20	2	100	1	100			9	28.1
		41-50	2	40	-	-	-	-			6	18.8
		51 and above	1	20	-	-	-	-			2	6.3

Source: Field survey, 2018

As can be observed in Table 4.1 above, 28 (87.5%) of the SMEs owners were male and 4 (12.5%) were female. The majority of the respondents were male. Apart from the social/cultural influence and restriction, the prevailing low level of technology by

manufacturing sectors, involving much more physical work, might have contributed to the less number of female workers in the study. With regard to the age of the respondents, 46.9 % of the sample enterprise owners were in the age range of 20-30 years, followed by 28.1 % with age range of 31-40 years. This implies that the majority of the sample small and micro enterprises owners were in the young age category.

Distribution of sample respondents by qualification and service year

Concerning qualification and service years of the respondents, as it can be seen from the table below, Most of the kaizen coordinators, SME office, and deans are Bsc/MA holders whereas about 56.3% of small microenterprise owners grouped in level 1- level 5. This indicated that most the enterprise owners graduated from TVET training center and about 21.9 % academic performance of enterprise owners are below grade 12. From this point of view, we can say that anyone can engage in to this business.

Regarding the experience of TVET deans/vice deans, SME officials and TVET Kaizen supervisors, about 60% TVET coordinators had4-7 years and about 43.8% Enterprise owner had an experience of 4-7 years.

Table 4. 2. Distributions of sample Respondents by qualification and service year

No	Item		Respondents (N=45)									
			TVET Coordinators (N=5)		MSEs Officer (N=2)		AKI (N=1)		Dean/ Vice dean (N=5)		MSEs Owners N=32	
			F	%	F	%	F	%	F	%	F	%
1	qualification	MA/MBS	1	20	-	-	-	-	1	20	-	-
		BA/BSC	4	80	2	100	1	100	4	80	2	6.3
		Diploma	-	-	-	-	-	-	-	-	5	15.6
		Level 1-5	-	-	-	-	-	-	-	-	18	56.3
		< grade 12	-	-	-	-	-	-	-	-	7	21.9
		Total	5	100	2	100	1	100	5	100	32	100
2	service	0-3	1	20	-	-	-	-	1	20	12	37.5
		4-7	3	60	1	50	-	-	1	20	14	43.8
		8-11	1	20	1	50	1	100	1	20	4	12.5
		> 12 years	-	-	-	-	-	-	2	40	2	6.3
		total	5	100	2	100	1	100	5	100	32	100

Source: Field survey, 2018

Establishment year of Enterprise

As we can see from the Figure below, we can show that 16 % of the sample enterprise was established in the year 2000-2002 E.C, 37% of sampled enterprise in the year 2003-2005 E.C and 47% of the enterprise population was established in the year 2006-2009 E.C. So we concluded that most enterprises were established in the year of 2006-2009 E.C. this trend indicated that establishment of enterprise increased from the year 2000-2009 E.C.

Figure 4. 1. Establishment year of Enterprise

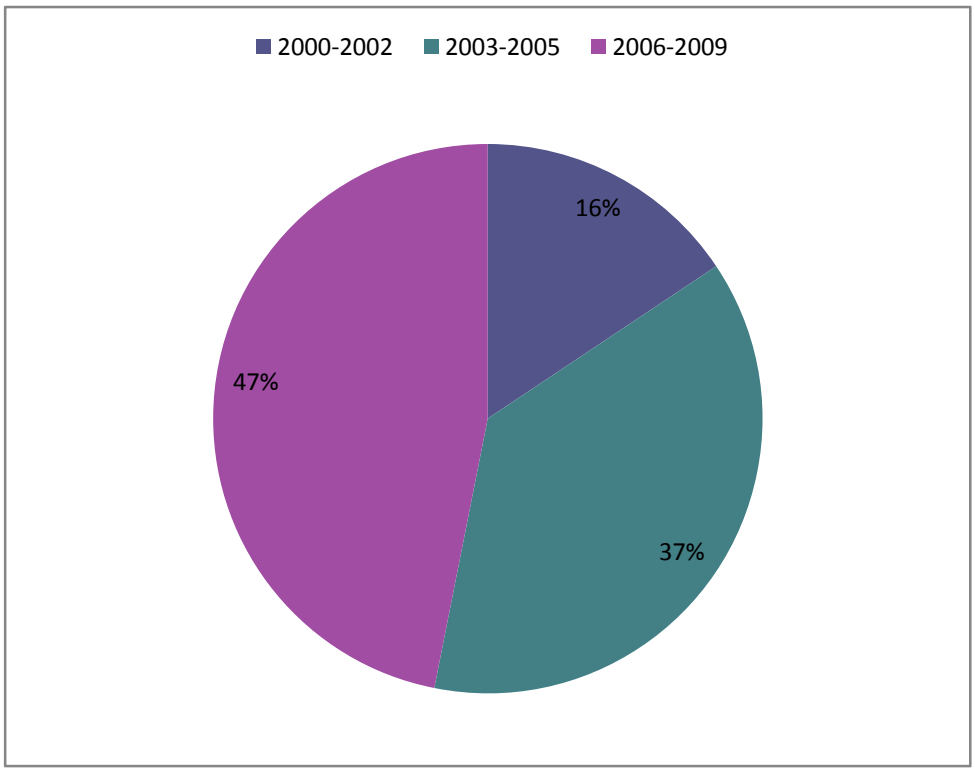
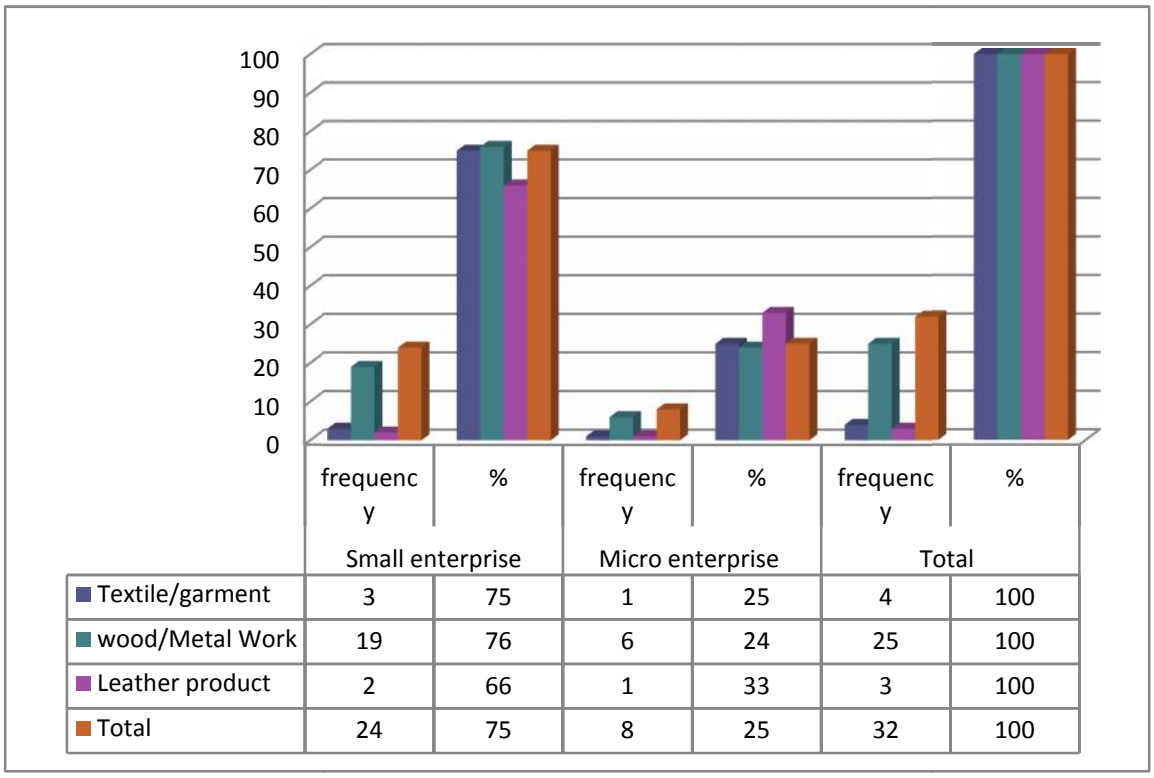


Figure 4. 3. Category of Enterprises in small and micro enterprises



	Small enterprise		Micro enterprise		Total	
	frequency	%	frequency	%	frequency	%
Textile/garment	3	75	1	25	4	100
wood/Metal Work	19	76	6	24	25	100
Leather product	2	66	1	33	3	100
Total	24	75	8	25	32	100

As it indicated in Figure 4.2 above, 75% of textile/garment enterprises were engaged in small enterprise and 25% of textile/garment enterprises were engaged in micro enterprises. About 76% of wood/ metal work enterprises were in small enterprise, 24% of wood/ metal work enterprises were in micro enterprises, 66 % of leather product enterprises were in small enterprise and 25% and 33% of garment and leather product enterprises were occupied in micro enterprises respectively. This shows that most of the sampled enterprises were in small enterprises.

Major Findings

SMEs owners were asked different questions regarding the issues affecting kaizen performance activity. Their responses were presented in the following tables.

Table 4. 3 5s Activity for Kaizen Pillars Factor

No	5s Factors	Respondent (N=32)						
		Frequency of Rating scale					Mean	Std. Deviation
		1	2	3	4	5		
1	The company sort what is not needed	1	2	9	15	5	3.66	.937
2	The company set in order what must be kept	2	4	9	13	4	3.41	1.073
3	The companies shine everything that remains clean and paint	3	5	12	10	2	3.09	1.058
4	The company standardization and self-discipline	4	14	9	5	-	2.47	.915
5	The company sustain the clean/check routine	5	16	5	6	-	2.38	.976

Note: - 1=Very Low, 2=Low, 3=Moderate, 4= High, 5=Very High

As it is indicated in the table above ,5s activity the enterprise sort what is not needed, with the highest mean (3.66) and a standard deviation of (0.937) so this activity is mostly the enterprise performed in the working area. The second most important 5s activity performed by the enterprise was set in order what must be kept, followed shine everything that remains Clean. This shows that the enterprise perform 3s rather than 5s.

Table 4. 4. Standardization activity for kaizen pillars factors

No	Items	Respondent (N=32)						
		Frequency of Rating scale					Mean	Std. Deviation
		1	2	3	4	5		
1	PLAN: - the company understanding the current status and setting objectives and analyzing the data in order to identify root causes.	-	3	5	16	8	3.91	.893
2	DO: - during manufacturing process the company establishing countermeasures based on the data analysis.	1	5	13	8	5	3.34	1.035
3	CHECK: - confirming the effects of the countermeasures in the company.	1	6	14	7	4	3.22	1.008
4	ACT: - establishing or revising the standards to prevent recurrences and reviewing the above processes and working on the next steps.	3	12	8	7	2	2.78	1.099

As it is indicated in the above table, the mean and standard deviation score for Standardization factor for kaizen implemented enterprise were calculated. The above table shows that from Standardization activity the enterprise Plan is with the highest mean (3.91) and a standard deviation of (.893) with the same manner the enterprise, the mean of Do is establishing countermeasures based on the data analysis 3.34. So this, two activity is mostly the enterprise performed in the working area. The second most important Standardization activity performed by the enterprise was Check and act with mean value of 3.22 and 2.78 respectively. From point of this it can be Saied that the enterprise did not as such Act the working on the next steps**.**

Table 4. 5. Factors Waste reduction activity for kaizen pillars

No	Items	Respondent (N=32)						
		Frequency of Rating scale					Mean	Std. Deviation
		1	2	3	4	5		
1	Waste from over production	6	17	5	2	2	2.28	1.054
2	Waste from waiting of workers	1	4	7	15	5	3.59	1.012
3	Waste from motion of workers	2	4	8	14	4	3.44	1.076
4	Waste from inventory	-	1	8	17	6	3.88	.751
5	Waste from transportation	2	5	15	7	3	3.13	1.008
6	Waste from processing	1	6	14	6	5	3.25	1.047
7	Waste from defect making	2	5	8	13	4	3.38	1.100

The table result below shown that the mean and standard deviation score for Waste reduction activity for kaizen implemented enterprise were calculated. From the result shows that Waste from over production activity of the enterprise relatively good and With the lowest mean of (2.28) and standard deviation of (1.054) but Waste from inventory relatively high with high mean of 3.88 and standard deviation of (.751) the other Waste of the enterprise followed were :Waste from waiting of workers ,Waste from motion of workers, Waste from transportation, Waste from processing , and waste from defect making with mean of 3.59, 3.44, 3.13, 3.25, 3.38 with a standard deviation of 1.012,1.076, 1.008, 1.047, and1.100 respectively. This result implied that wastage of reduction in the enterprise was to some extent high as compared to (Henok. 2016).

Table 4. 6. Quality Related for kaizen productivity factors

Quality related factors	Respondent (N=32)						
	Frequency of Rating scale					Mean	Std. Deviation
	1	2	3	4	5		
Quality commitment of management	-	2	6	17	7	3.72	1.085
Less quality of product	2	2	6	15	7	3.91	.818
Customer compliant	2	3	14	8	5	3.34	1.066
Mechanisms to solve complain	4	4	13	7	4	3.09	1.174
Total Quality Control tool application	7	15	8	2	-	2.16	.847
Producing materials based on customer need	3	5	15	6	3	3.03	1.062

The result of above table shows that Total Quality Control tool application has less mean value which is 2.16 with standard deviation 0.847, this show that the enterprises relatively used less Total Quality Control tool and results to less quality product. the other result show that Poor quality of product of the enterprise relatively high with mean standard deviation of 3.91 and 0.818 respectively and the other Quality Related for kaizen productivity factors with mean and standard deviation were: Quality commitment of management, Customer compliant, Mechanisms to solve complain and Producing materials based on customer need 3.72, 3.34, 3.09, 3.03 and 1.085, 1.066, 1.174, 1.062 respectively and shows that implementation of kaizen affects quality of products.

Table 4. 7. Working time related activity

Working Time Related Factors	Respondent (n=32)						
	Frequency of Rating scale					Mean	Std. Deviation
	1	2	3	4	5		
The time taken to produce a single product within a day in the shop	3	4	13	7	5	3.22	1.157
Preparing of machines for producing of products per a day with in the shop	8	14	6	4	-	2.19	.965
Waiting time of the enterprise to produce for customers	9	13	6	4	-	2.16	.987
The time taken to produce one material and the next materials in the shop	4	5	14	6	3	2.97	1.121
Transfer of materials to arrange within the shop	6	5	13	6	2	2.78	1.157

The result of above table explained that Waiting time of the enterprise ,Transfer of the enterprise and Preparing of machines for producing of products per a day with in the shop has less mean value which is 2.16, and 2.19 with standard deviation 0.987 and 0.965 respectively, this show that Weighting time and Preparing of machines for producing of products per a day with in the shop relatively has less effect on Labor productivity of the enterprises, the other result show that The time taken to produce a single product within a day in the shop has relatively highest mean 3.22 with standard deviation 1.157. This show that proper Implementation of kaizen reduced wastage of time and increase productivity.

Table 4. 8. Labor factors and Level of the enterprise owner's perception (believe) on the importance of kaizen implementation in the SMEs

labor Related Factors	Respondent (n=32)						
	Frequency of Rating scale					Mean	Std. Deviation
	1	2	3	4	5		
The number of workers in the enterprise fit the work	2	7	15	6	2	2.97	.967
Educational status of workers	1	2	7	17	5	3.72	.924
Commitment of workers	3	4	13	10	2	3.13	1.040
Solution making status of workers	3	12	9	8	-	2.69	.965
Level of the enterprise owners perception (believe) on the importance of kaizen	1	10	11	10	-	2.94	.878

Among labor related factors Solution making status of workers, Payment and benefit of workers and the number of workers in the enterprise fit the work score relatively low mean of 2.69, 2.94, and 2.97 with standard devotion of 0.965, 0.878 and 0.967 respectively. for the enterprise so these activities affect the labor productivity of the enterprise the other factors shown from the table result Commitment of workers and Educational status of workers have relatively high mean value of 3.72, 3.13 and a standard deviation of 0.924 and 0.040 respectively. This illustrated that, Commitment of workers level of the enterprise owners perception (believe) on the importance of kaizen and Educational status of workers has great important for productivity improvement.

Table 4. 9. Issues on challenges and effectiveness of kaizen implementation in the sample SMEs

No	Items	Respondent (N=32)						
		Frequency of Rating scale					Mean	Std. Deviation
		1	2	3	4	5		
1	Lack of coordination, communication and integration with TVET cause poor Kaizen implementation	-	3	7	14	8	3.84	.920
2	Facilities and accommodations were conducive to the implementation of kaizen	-	4	4	11	13	2.81	.896
3	TVET trainers implementation of kaizen At your shop	2	4	13	8	5	3.31	1.091
4	Kaizen provides opportunity to participate in decision making	-	-	5	10	17	4.16	.954
5	Kaizen had a positive effect on work area	-	-	2	10	20	4.50	.622
6	Kaizen implementation brought quality products and services in terms of efficiency and effectiveness	-	-	4	9	19	4.41	.837

1. Strongly disagree, 2. Somewhat disagree, 3. Agree, 4. Somewhat agree, 5. Strongly agree

As it is indicated in the above table, the mean and standard deviation Facilities and accommodations were conducive to the implementation of kaizen is 2.81 and 0.896 respectively. This result shows that Facilities and accommodations of SMEs to the implementation of kaizen did not as such the factor for the implementation of kaizen. The the mean and standard deviation for positive effeteness of kaizen on work area, Kaizen

implementation brought quality products and services in terms of efficiency and effectiveness and Kaizen provides opportunity to participate in decision making are 4.50, 4.41, 4.16 and .622, .837 and .954 respectively. This result confirmed that positive effeteness of kaizen on work area.

Table 4. 10. Issues related on kaizen training by SMEs owners

No	Items	Respondent (N=32)						
		Frequency of Rating scale					Mean	Std. Deviation
		1	2	3	4	5		
1	Do you think your enterprise has got interrupted employee training program on kaizen?	2	16	10	4	-	2.50	.803
2	The training which are given by TVET trainers are enough	3	10	12	7	-	2.72	.924
3	The training which are given by MSE office are enough	2	15	9	6	-	2.59	.875
4	The training which are given by AKI are enough	30	2	-	-	-	1.06	.246

1. Not really 2. Not quite enough 3. Partially enough 4. Good training program 5.Very good training program

As indicated in the above table and as all mean and standard deviation of respondents are: interrupted employee training program on kaizen, the training which are given by TVET trainers, the training which are given by MSE office are and the training which are given by AKI were 2.50, 2.72, 2.59, 1.06 and .803, .924, .875 and .246 respectively are the main challenges for these SMEs to implement kaizen; specially the training which are given by AKI is very much less.

Table 4. 11. Issues related to practice of kaizen implementation

No	Items	Respondent (N=32)						
		Frequency of Rating scale					Mean	Std. Deviation
		1	2	3	4	5		
1	To what extent the worker involvement in Kaizen programs in your workplace can be explained?	-	5	13	12	2	3.34	.827
2	Adoption of kaizen implementation to sustain long-term continuous improvement	-	17	10	5	-	2.63	.751
3	Implementation of kaizen in your shop brings desire out put	-	4	8	15	5	3.66	.902
4	How you can measure the practice of kaizen in your shop?	-	6	14	9	3	3.28	.888
5	Satisfaction of enterprise owner and operators after kaizen implementation	-	-	8	17	7	3.97	.695

1. Very Good 2.Good 3.Fair 4.Poor 5.Very Poor

In the table above, the mean of Adoption of kaizen implementation to sustain long-term continuous improvement is 2.63 with standard deviation 0.751. This shows that kaizen has poor adoption to sustain long-term continuous improvement but the mean of Satisfaction of enterprise owner and operators after kaizen implementation is 3.97 with standard deviation 0.695.

Table 4. 12. Seven quality control related factors

Items	Mean	Std. Deviation
Check Sheet	2.53	.983
Histogram	1.75	1.191
Pareto Analysis	1.63	.751
Fishbone Diagram	1.38	.707
Scatter Diagram	1.28	.924
Flowchart	1.28	.683
Control Chart	1.16	.723

As it is seen in the above table, the mean and standard deviation score for issues related to seven quality control related factors were calculated. Based on this the mean of check sheet is 2.53 and its. Std. Deviation is 0.983. One of the tools of kaizen is seven quality control circles which can assist any organization for problem solving and process enhancements. It is true that Seven QC tools are most helpful in troubleshooting issues related to quality and all processes are affected by multiple factors and therefore statistical QC tools can be applied to any process. Guru was the first that planned seven basic tools was Dr. Kaoru Ishikawa in 1968. All seven quality control tools of means are less than 2.53. This shows that the applications of these 7 QCC tools were not as such practiced in the study area.

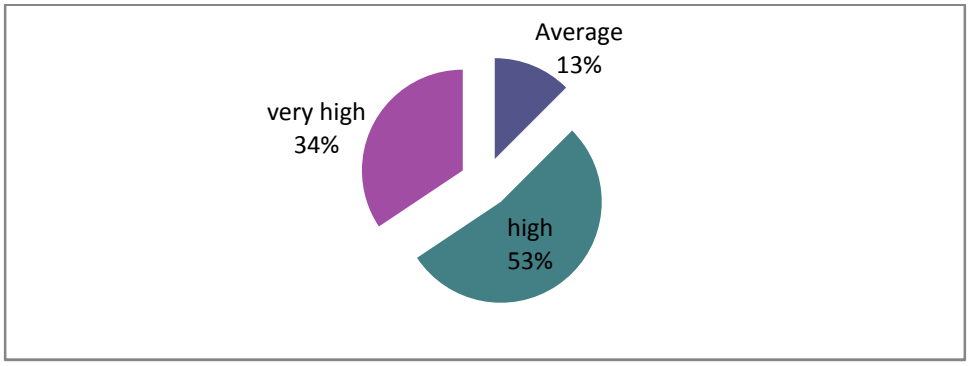
Productivity after implementation of kaizen

The kaizen methods are internationally acknowledge as a methods of continuous improvement through small steps, the small improvement applied to key process will generate multiplication of the company profit (Juli Ratnawati , Kusni Ingsih , & Imam Nuryanto, 2016). Kaizen, the Japan philosophy of management improved productivities, efficiency, quality, improving in the work process, team work and motivation of workers developed.

Based on the definition analysis of both the concepts of Kaizen and the productivity, Kaizen is similar to the idea of productivity improvement, especially when considering the incremental productivity that comes from efficiency of resources utilization with

(Tangen, 2002)'s idea, high productivity could be tracked from the good efficiency and the good effectiveness of production line. The good efficiency could be closely connected to the proper Kaizen activity. Therefore, the productivity could be obviously connected to the concept of Kaizen.

Figure 4. 2. Productivity after implementation of kaizen



Source: Questionnaire filled in May 2018.

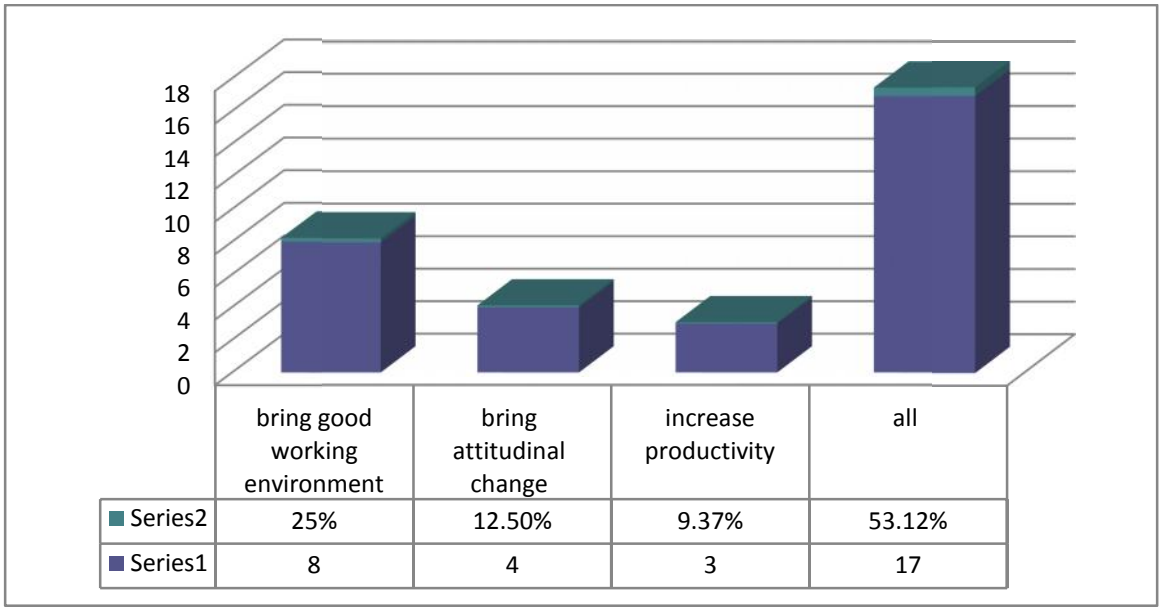
As we can see from the above figure 4.2., Productivity was high or 53% after implementation of kaizen. The rest respondent's said that productivity increase after implementation in the percent of 34% and 13% very high and average receptively. So we concluded that productivity was high after implementation of kaizen.

Success of Kaizen Implementation

As articulated by Abhiji (2013), the success of kaizen out of the country transferability and implementation of the kaizen practices in Ethiopia depend on the degree of compatibility between the Japanese company's kaizen culture and the Ethiopia national culture. Given this conceptual framework into account, the introduction of kaizen as a management tool and success in the transfer of technology to improve and enhance productivity and managerial capability is critical. Generally, Respondents were asked to respond the success of kaizen implementation that is intended to measure their opinion towards kaizen implementation.

As indicated in figure below, Success of kaizen brought good working environment, brought attitudinal change and increase productivity 25%, 12.5% and 9.37 respectively. From point of this we concluded that brought good working environment, brought attitudinal change and increase productivity are indicators of success of kaizen implementation.

Figure 4. 3. Issues related to Success of kaizen implementation



Source: Questionnaire filled in May 2018.

4.3. Discussion and results

In this section the data collected from questionnaires is discussed and analysis by means of descriptive statistics.

Based on results made for this study, it was observed that the mean and standard deviation for the level of the enterprise owner's perception (believe) on the importance of kaizen is 2.69 and 0.965 respectively. This shows that SMEs' owners have quick return expectation after implementing KAIZEN, which is not easily materialized. In addition to this, a poor commitment of supported enterprises to apply kaizen philosophy was observed.

Various factors that influence the productivity of small and micro enterprise were as follows. From Table 4.3 5s activity for kaizen implementation: the company sort what is not needed, the company set in order what must be kept. Make things visible, the companies shine everything that remains, Clean and paint to provide a pleasing appearance, the company sustain the clean/check routine and the company standardization and self-discipline. So from this result we concluded that the company standardization and self-discipline and the company sustain the clean/check routine became decreased as compare to (Henok, 2016) and. P., 63.

From Table 4.4 Standardization activity for kaizen implementation factors: act for establishing or revising the standards to prevent recurrences and reviewing the above processes and working on the next steps, plan to understand the current status and setting objectives and analyzing the data in order to identify root causes, check confirming the effects of the countermeasures in the company and the company do during manufacturing process the company establishing countermeasures based on the data analysis.

From Table 4.5 Waste reduction activity for kaizen pillars factors: Waste from time spent waiting, Waste from overproduction, Waste in processing time, Waste from defects , Waste from product defects, Waste from productions lead time, Waste from transportation, Inventory waste, Waste from changeover/ set-up time and Waste of motion. This result to same extent high wastage was observed as compare to the result of (Henok, 2016).

From Table 4.7 Working Related activities for Labor productivity factors: Lead time of the enterprise, Cycle time of the enterprise, Take time of the enterprise, Transfer time of the enterprise, Weighting time of the enterprise and Set up time of the enterprise. From Table 4.8 Labor Related activities for Labor productivity factors: Commitment of workers, the number of workers in the enterprise, Solution making status of workers, Educational status workers and Payment and benefit of workers.

From Table 4.6 Quality Related activity for Labor productivity factors, Quality commitment of management, Bing Customer driven of products, Quality awareness of the enterprise, Total Quality Control tool application, Customer compliance and Poor quality of product.

From Table 4.7 Working time related activity show that Waiting time and Preparing of machines for producing of products per a day with in the shop relatively has less effect on Labor productivity of the enterprises as it has shown in table 4.7; the other result show that The time taken to produce a single product within a day in the shop has relatively highest mean 3.22 with standard deviation 1.157 and followed The time taken to produce one material and the next materials in the shop of the enterprise and Transfer of materials to arrange within the shop mean and standard deviation were 2.97, 2.78 and 1.121 ,1.157 respectively. This show that Working time related activities have some effects on productivity of the enterprise.

As it is seen in the table 4.12, the mean and standard deviation score for issues related to seven quality control related factors were calculated. Based on this all means were less than 2.53 and their Std. Deviation were greater than.683; seven quality control circles which can assist any organization for problem solving and process enhancements. It is true that Seven QC tools are most helpful in troubleshooting issues related to quality and quantity products (Ishikawa, 2009). From point of this we concluded that the applications of these 7 QCC tools were not as such practiced in the study area.

Regarding productivity improvement practice of the enterprise, every member of enterprise should know and understand about productivity. Regarding the characteristic of productivity in the enterprise has tried to obtain Prior knowledge of productivity, whether the company is implementing or planning to implement some aspects of productivity, nature of productivity efforts in enterprise, and practices of productivity improvement systems in the company.

Beside the above mentioned result concerning the characteristic of productivity improvement practice of the enterprise, from the analysis data result in the Figure 4.2 above shown that 53% respondents answered that high, 13 % respondents answered average and 34 % respondents answered very high

From the finding of the result the major reason most of the enterprises did not fully implemented kaizen and continuous improves their working method that lead not to have proper productivity increasing rate due to lack of perception about kaizen philosophy not

as much of practice of kaizen, poor commitment and awareness of kaizen as a result adaptability of kaizen reduced as I argued with (Brhanu, 2014).

Kaizen routine Process

Routine Process of kaizen was discussed to enterprise managerial, and kaizen operator's, by taking into consideration different factors which are found to be improved through Kaizen. One of the major objectives in implementing Kaizen System in small and micro enterprise in manufacturing sector is to achieve a common goal of the whole enterprise. The objective of kaizen to be consider during implementation process are increasing productivity; so improving the level of training, improving the performance and kaizen programs by encouraging the employees are fundamental for incremental of productivity. Training by Internal/external bodies like AAKI, SMEs officials and TVETs are carrying out to create awareness, improving communication and operating skills of the employees. During implementation process there should be over all participation of employees in order to resolve occurring difficulty throughout group activities like (Small group activities, Quality circles and suggestion Schemes). Therefore, Kaizen assists the enterprises a guide role for improving their productivity process

CHAPTER FIVE

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter deals with the summary of the study on practice and challenges in the application of kaizen in Arada and Yeka sub-city SMEs in manufacturing sector. Based on the major Findings, some conclusions have been drawn and workable recommendations have been finally forwarded.

5.1. Summary of the Study

The main purpose of this study was to investigate the practice and challenges in the application of kaizen in Yeka and Arada sub-city kaizen supported manufacturing of small and micro enterprises. In particular, the study aimed to investigate challenges and practice encountered due to Kaizen program implementation in the study area and to determine to what extent the kaizen system has been practiced and implemented in Small and Micro Enterprises specifically in manufacturing sector. In order to achieve the above objectives, the following basic questions were set:

1. What is the level of the enterprise owners perception on the importance of kaizen
2. What were the gaps between the kaizen strategy and application of kaizen?
3. What motivational factors small and micro enterprises got after they get kaizen support from Technical, Vocational, Educational and Trainings?
4. To what extent do the kaizen system has been practiced and implemented in Micro Small Enterprises?

A mixed research approach was employed to assess the practice and challenges in the application of kaizen in Yeka and Arada sub-city kaizen supported manufacturing of small and micro enterprises. From the different mixed research methods, concurrent embedded mixed research was employed. That is, both quantitative and qualitative data were collected at a time. Questionnaires and interview questions developed by the researcher himself were used to collect data from the respondents.

As the research indicated that most of the enterprises didn't apply properly Kaizen particularly after implementation the sustainability of the strategy most of the enterprises

quit less after the TVET kaizen coordinators leave the enterprise, Awareness creation is not carried out properly before starting the implementation of kaizen, Due to the willingness of the enterprise is less

This made them difficult to implement and the success rate are lower than kaizen strategy standard. There are also limited types of success stories in the actual implementation of kaizen strategy in the study area. However, such stories are surrounded by challenges which have emanated from existing gaps in knowledge enterprise owners and their attitudes towards kaizen strategy.

According to open-ended responses with regarding to, TVET deans, Arada and Yeka sub-city SMEs official coordinators, TVET kaizen Coordinators and AAKI coordinators) expressed their opinion on practice and challenges of kaizen implementation were almost similarly pointed out in the following way:

1. TVET deans have poor commitment for implementation of kaizen and they did not provide sufficient training program for SMEs.
2. Be short of commitment, knowledge on safety; and skilled full supervisors of TVET kaizen Coordinators, sub-city SMEs official coordinators and AAKI coordinators on the practical application of kaizen. Generally, the linkage of these the above stakeholders were poor and leading to less kaizen implementation was observed in SMEs.

With regarding to kaizen practice, mean and standard deviation were calculated by using IBM SPSS version 24 at different tables according to the questions raised. Detail information was available at each table in chapter four. But at this section summary of kaizen practice and challenges were considered. So most enterprises owners involved in implementation of 5s of kaizen at the first time but they were unable to sustain kaizen; as the mean of sorting showed that 3.66 and adaption of kaizen 2.63.

With regarding to Standardization of kaizen implementation from table 4.4., the mean and standard deviation enterprise were calculated. From point of this the mean of Plan, Do, Cheek and Act were 3.91, 3.33, 3.22 and 2.78 respectively. This indicated that implementation of kaizen is high at Plan stage and low at Act stage.

With regarding of waste reduction as shown in table 4.5 that the mean and standard deviation score for Waste reduction activity for kaizen implemented enterprise were calculated. From the result shows that Waste from over production activity of the enterprise relatively good and With the lowest mean of (2.28) and standard deviation of (1.054) but Waste from inventory relatively high with high mean of 3.88 and standard deviation of (.751). This result implied that wastage of reduction in the enterprise was to some extent high as compared to (Henok, 2016).

The other issue with concerning of Quality Related Factors for Labor productivity of Mean and standard deviation were calculated. The result of in table 4.6 shows that Total Quality Control tool application has less mean value which is 2.16 with standard deviation 0.847, this show that the enterprises relatively used less Total Quality Control tool and results to less quality product. The other result shows that Poor quality of product of the enterprise relatively high with mean standard deviation of 3.91 and 0.818 respectively. Therefore, Total quality control did not as such adaptive.

Generally, In relation to total kaizen implementation, focusing on 5s was better than other kaizen tools like QCC and TQM. Needs of training on kaizen concept, issue related to practice of kaizen, training on QCC of mean value were almost above average. This may indicated that SMEs were understand that kaizen focuses only in “5s” implementation. This also argued that with pillars of kaizen described in the review of related literature. From the concept of kaizen implementation “5s” is the one that is done in the implementation phase. But the other elimination of waste, using of kaizen tools and standardization were not practiced well. This may reveal that now days the SMES implements “5s” rather than pillars of kaizen.

5.2. Conclusions

The first chapter was observed an introductory part of the kaizen practice, challenges and backgrounds of the study was observed. The joint work of the TVET and SMEs for the purpose of implementing kaizen was accomplished with stakeholders. The aim of the implementation was improving production and productivity of SMEs and benchmarking the best practices of the TVET and SMEs and also a mechanism to transform new innovation hence, TVET expected work more than that of enterprises. Arada and Yeka

TVET strengthened SMEs to be centers for technology capabilities' accumulation and transfer to the users.

From the literature review, it can be concluded that, one of the best ways to improve productivity of small and micro enterprise is to implement kaizen system in enterprise operations. As we have seen so far, kaizen philosophy is production philosophy that will permit small and micro enterprise to improve their productivity through kaizen tools by reducing waste, and improving largely manufacturing activity of the enterprise.

Chapter three deals about the methodology of the research; under this chapter descriptive research design with mixed research approach was used. Under this chapter the research methodology falls within the descriptive approach of the interpretive and statistical analysis paradigm in which mixed approach is the most prominent, (Kothari, 2004). A descriptive research design methodology was employed with an assumption that it could help to generate adequate information about the major challenges and opportunities of in the application of kaizen while it was implemented.

the researcher used purposive, and simple random sampling techniques of non-probability and probability sampling in order to identify, select and interview samples of potential managerial owners and operators in the SMEs. During data collection, both quantitative and qualitative data were employed in the study for the understanding of the complete picture of the implementation of the kaizen in Yeka and Arada sub-city manufacturing micro small enterprises. It needs to apply appropriate data collection instruments. The instruments used to gather data were questionnaire, interview and document analysis with respect to (Kumar, 1999), stated that employing multiple data collection instruments help the researcher to combine, strengthen and amend some of inadequacies of the data. Both primary and secondary data were used.

The questionnaires were designed in a self-administered format to enable the respondents fill the answers by their own (Dawson, 2002). In this study, structured and semi structured interviewers questionnaires are used to develop solicit ideas related to the research objective from respondents. A pilot testing using the questionnaire was conducted.

Through the analysis of the research results, generally shows that, the existing problems identified in the productivity improvement of micro and small enterprises practices in Addis Ababa are a lot of problems which includes 5s activity, Standardization problems of Waste from the, Quality related problems Use of appropriate hand tool and Adaptation of new technology), Working time related problems Labor related problems (Commitment of workers, the number of workers in the enterprise, Solution making status of workers, Educational status of workers , Cooperativeness of all worker in the enterprise, Employ involvement in problem solving and empowerment for the enterprise, The relationship among workers, Commitment of management and workers to solve the problem and Considering all workers us an asset of the enterprise were the main problems that were observed in the study area.

As the finding of current practice from the research result shows that in light of improving productivity through implementation of kaizen tool, by implementing 5s tools, PDCA, & QCC and effort to elimination of unnecessary operations and activities. However, some of the kaizen techniques were not applied in micro and small enterprise such as: Setting safe action plans, employee resistance towards continuous because of poor perception about kaizen, limitation of the level and continuity of training program, involvement of all people in the enterprise. The study also exposed be short of motivation among employees due to inability of management to involve them in decision making, lack of recognition of hardworking employees, inadequate communication and lack of workplace meetings was among the challenges that hinder kaizen practices within enterprise.

5.3. RECOMMENDATIONS

Based on those findings of the research, the researcher suggests the following possible and reasonable recommendations for action to be undertaken by each stakeholder at different levels to improve the implementation of kaizen in Yeka and Arada Sub-City Small and micro Enterprises in manufacturing sector, the following recommendations were suggested.

1. The suggestion system is one of the core principles of Kaizen. The system helps both kaizen owners and workers/kaizen operators to correspond two way communications to implement kaizen. Next to this, the systems serve as an information channel for the continuous improvement process. Hence, missing this process will have serious impacts on the implementation process as well as sustainability of kaizen. As a result, Enterprise owners/kaizen operators should give at most attention and consideration for the suggestion system as well as the way workers opinions and suggestions are managed.
2. Regarding kaizen training which given by TVET and SMEs officials, Kaizen philosophy is a continuous learning process which promotes learning culture. Kaizen is all about organizational culture change through continuous training and development. Hence, giving continuous training and development system within the work shop is fundamental
3. The challenge marked with regarding of Enterprise owners/ kaizen operators were resistance to apply kaizen in the working shop. This challenge is often related with the mind set of workers .Besides this; it takes quite a long time and can hinder the speed of producing both quality and quantity products well in time. Therefore, the enterprises should solve the challenge by opening themselves for TVET and SMEs Supporters and creating awareness, providing training and education on the issues.
4. The other issue raised here is TVET kaizen coordinators' ambiguity in supervising of the kaizen teams. Accordingly, TVET kaizen coordinators' should give due consideration and emphasis to harness the knowledge, skills, and attitudes of kaizen operators and enterprise owners, TVET trainers. For the reason that, TVET kaizen coordinators' are shapers of Kaizen implementation with frontline workers.
5. Government should Support these SMES: - since kaizen philosophy is new for Ethiopian industry especially in Addis Ababa. Technical support like Industry Extension service from governmental stakeholders like TVET bureau, Kaizen Institution, MOI, FeMSEDA etc.) is mandatory. This is going to enhance the

motivation of enterprise, and also help the enterprise to financing the implementation process of kaizen.

6. Awareness Creation for the Top Management:-Top management is the key t for implementation of kaizen through coordinating of workforce. Kaizen operating principles are so different from traditional operations that it calls for fundamental changes in the way people do and think about their jobs. Therefore, the purpose of Awareness Creation for the Top Management is to give an understanding of productivity improvement throughout kaizen.
7. Focus on Small Group: - A kaizen strategy includes small group activities which is informal, voluntary, intercompany groups organized to carry out specific tasks in a workshop environment. The most popular type of small-group activity is quality circles. So the entire workers need to aware the benefit of quality control circle
8. Implementing 5s Activity: -The beginning of the kaizen housekeeping journey of the enterprise management starts by displaying a level of orderliness and clarity of the work area using the following Five Steps (5S).
9. Finally regarding the prospects of Kaizen program implementation in view of the GTP two achievements: The Addis Ababa kaizen institutes with the cooperation of Ethiopian Kaizen Institute (EKI) and other stakeholders are responsible for the implementation of the program in Addis Ababa manufacturing sector. AAKI should work closely with stakeholders and partners to introduce Kaizen into SMEs sector including the Technical and Vocational Education and Training (TVET) system and should introduce Kaizen to especially for all manufacturing sectors. Other mechanisms to enhance kaizen implementation it is advisable to use different Medias and create national awareness on Kaizen. For that reason, to document and monitor the availability of kaizen at Arada and Yeka manufacturing sector, a continuous and reasonable study is useful

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APENDIXES/ መግለጫ 1.

አዲስ አበባ ዩኒቨርሲቲ

የትምህርትና ባሕርይ ጥናት ኮሌጅ

ስርዓተ-ትምህርትና ማስተማር ትምህርት ክፍል

ማኔጅመንት ኦፍ ኮክሸናል ኢዱኬሽን የድህረ ምረቃ ፕሮግራም

በአራዳ እና የካ ክ/ከተማ ውስጥ በሚገኙ በፖሊ ቴክኒክ ኮሌጅ፤ቴክኒክ ኮሌጅና ቴክኒክ ተቋማቶች ስር በሚገኙ ጥቃቅንና አነስተኛ ኢንተርፕራይዞች በተመረጡ በማኑፋክቸሪንግ ዘርፍ የካይዘን ድጋፍ ለሚደረግላቸው ባለቤቶችና አንቀሳቃሾች የሚሞላ የጥናት መጠይቅ

እኔ **ክንፉ አደሬ** የአዲስ አበባ ዩኒቨርሲቲ የባህራይ ትምህርት ክፍል የድህረ ምረቃ ፕሮግራም ተማሪ ሲሆን በካይዘን የምርት ማሻሻያ ፍልስፍና አተገባበሩና ችገሩ ምን ይመስላል በሚል በየካና አራዳ ክፍለ ከተማ በተመረጡ ማኑፋክቸሪንግ ኢንተርፕራየዞች ላይ ለመዳሰስ የተዘጋጀ የጥናት መጠይቅ ነው፡፡ በዚህ መጠይቅ የሚሰበሰበው መረጃ የሚውለው ለትምህርታዊ ጥናት ብቻ ሲሆን ከመጠይቁ የሚገኝ መረጃ ለማንም ወገን ተላልፎ እንደማይሰጥ ከወዱሁ አረጋግጥላችኋለሁ፡፡

መጠይቁ ሲሞላ፡ -

1. ስምዎትንም ሆነ ፊርማዎትን መግለጽ ወይም ማስቀመጥ አይጠበቅብዎትም
2. የኢንተርፕራይዘን ዝርዝር ፕሮፋይል በሚከተሉት ቦዶ ቦታ ይሙሉ
3. ከተመለከቱት አምስት የቁጥር አማራጮች መካከል (1፣ 2፣ 3፣ 4፣ 5፤) በሰንጠረዡ ዉስጥ የሚስማማዎት ላይ ምልክት ያድርጉ፡፡

በጥቃቅንና አነስተኛ ኢንተርፕራይዝ ከይዘንን በመተግበር ምርታማነትን ለማሻሻል ያስችለን ዘንድ በተጠቀሱት ነጥቦች ያሎዎትን ግንዛቤ/ አመለካከት ለማዎቅ ያስችለን ዘንድ በሰንጠረዡ የተካተቱት ሀሳቦች የሚስማማዎትን ነጥብ በእያንዳንዱ ጥያቄ ትይዩ ሳጥን ዉስጥ ያመልክቱ

አመሰግናለሁ

ክፍል አንድ

<u>በካይዘን አተገባበር ላይ መሰረት በማድረግ በኢንተርፕራይዝ ባለቦቶችና አንቀሳቃሾች የሚሞላ መጠይቅ</u>

ክፍል አንድ

ስለ ኢንተርፕራይዙ ሁኔታ

1. **ኢንተርፕራይዙ ስም፡----------**
2. **ፆታ፡ ወንድ----------ሴት----------**
3. **እድሜ፡ ----------**
4. **የተሰማራበት ዘርፍ፡----------**
5. **አድራሻ፡----------**
6. **የተመሰረተበት ዓ.ም፡----------**
7. **የኢንተርፕራይዙ ደረጃ፡----------**
   I. **ጀማሪ----------**
   II. **መካከለኛ----------**
   III. **ከፍተኛ----------**
8. **የሰራተኞ የትምህርት ደረጃ**
   I. **ዲግሪ----------**
   II. **ድፕሎማ----------**
   III. **ደረጃ 1-ደረጃ 5----------**
   IV. **ከ 12ኛ ክፍል በታች----------**

ክፍል ሁለት

በሰንጠረዡ ወስጥ ለተጠቀሱት ሀሳቦች እርሶ ያሎትን አመለካከት ሊገልፅ የሚችለውን ደረጃ ከተሰጡት አምስት ቁጥሮች መካከል (1፤2፤3፤4፤ እና 5) ቁጥሮችን በያዘው የሰንጠረዥ ክፍል ውስጥ የሚስማማዎትን ምልክት ያድርጉ

ደረጃ፡ (5) በጣም ከፍተኛ ፣ (4) ከፍተኛ (3) መካከለኛ፣(2) ዝቅተኛ እና (1) በጣም ዝቅተኛ

ተ.ቁ 1	በ5 "ማ" ዎች የምርት ማሰደጊያ መሳርያ መሰረት የመስርያ ቦታ አደረጃጀት ምን ይመስላል?	1	2	3	4	5
1.1	**መለየት፡-** መስሪያቤቱ የሚያስፈልጉ እን ያማያስፈልጉ ግብአቶችን በመለየት አስፈላጊ በሆነ ቦታ ማስቀመጥ በተፈለገ ጊዜ መጠቀመ					
1.2	**ማስቀመጥ፡-** የመስርያ ግብአቶችን/እቃዎችን በቅደም ተከተል በማስቀመጥ በቀላለ ለማግኘትና ለመጠቀም እንዲያስችል አድርጎ መቀመጡ					
1.3	**ማፅዳት፡-** ሁለንም መስርያ ግብአቶችን/እቃዎችን በማፅዳት ተጠቃሚው በቀላለ እንዲጠቀምበት ማዘጋጀት መቻሉ					
1.4	**መስቀጠል፡-** ስራዎችን በሚሰራበት ወቅት እና የ ምንጠቀምባቸውን መንገዶች 3ቱን ማዎች መስቀጠል መቻሉ					
1.5	ማዝለቅ፡- የተሰሩትን ስራ ቀጣይነት ባለው መልኩ መስኬድ መቻሉ					
2	**መስቀጠል፡-**መስሪያቤታችሁ ስራዎችን ስሰራ ከታች የተዘረዘሩ ነጥቦች ኡደት ጠብቆ መስራቱ አስፈላጊ ነው መስሪያቤታችሁ ኡደቱን ጠብቆ ከመስራት አኳያ በመስሪያቤታችሁ ያለውን ሂደት እንዴት ትገልፀዋለህ	1	2	3	4	5
2.1	**ማቀድ፡-** የምንሰራውን ስራ በመምረጥ በአሁኑ ጊዜ ያለውን ሁኔታ መረዳት እና ማቀድ በመጨረሻም ያገኘናቸውን መረጃ					

	መሰረት በማድረግ መሰረታዊ ችግሮችን ለመረዳት የሚደረግ ጥረት መኖሩ					
2.2	**መተግበር፡-** በሀደቱ በተገኘው መረጃ መሰረት አጠፋዊ እርምጃ ለመውሰድ የ ሚደረግ ጥረት መኖሩ					
2.3	**ማረጋገጥ፡-** በተወሰደው እርምጃ መሰረት የተገኘውን ተፅኖ ለማረጋገጥ የ ሚደረግ ጥረት መኖሩ					
2.4	**ማስተካከል፡-** ማሻሻል ሚገባውን ነጥቦች ላይ እርምጃ ለመዉሰድ የሚደረግ ጥረት መኖሩ					
3	ብክነት መቀነስ: - የካይዘን ዘዴ በኢንተርፕራይዛችሁ ከተተገበረ የሚወገዱ ብክነቶች ይኖራሉ የእነዚህ ብክነቶች መጠን እንዴት ትገ ልፃለህ ?	1	2	3	4	5
3.1	ከበቂ በላይ ምርት ማመረት የመፈጠር ብክነት					
3.2	በስራ ወቅት በሚፈጠረው የሰራተኞች መጠባበቅ የሚፈጠር ምክንያት					
3.3	በአላስፈላጊ እንቅስቃሴ የሚያጋጥም ብክነት					
3.4	በተለያዩ የንበረት ክምችቶች ምክንያት የሚፈጠር ብክነት					
3.5	በትራንስፖርት ምክንያት የሚፈጠር ምክንያት ብክነት					
3.6	በምርት ህደት ውስጥ ምርት በመበላሸት የሚፈጠር ብክነት					
3.7	በምርት ብልሽት የሚያጋጥም ብክነት					
4	ከምርት ጥራትና ጋር ባለው ግንኙነት የሚታዩ ምክንያቶች	1	2	3	4	5
4.1	ማኔጅመንቱ በጥራት ላይ ያላቸው ቁርጠኝነት					
4.2	ጥራት የሌለው ምርት					
4.3	የደንበኞች ቅሬታ መጠን ከመፍታት አኳያ					
4.4	የጥራት መቆጣጠሪያ መንገዶችን የመጠቀም ሁኔታ					
4.5	በደንበኛ ፍላጎት ላይ ተመስርቶ የሚመረት ምርት					
5	ከጊዜ ጋር በተያየዘ የሚመረቱ ምርቶች	1	2	3	4	5
5.1	በሾፑ ውስጥ በቀን አንድ ምርት ለማምረት የሚወስድበት ግዜ					
5.2	በኢንተርፕራይዙ ውስጥ አንድን ምርት ለማምረት ማሽኖችን					

	የምናዘጋጅበት ግዜ					
5.3	በሾፑ ውስጥ አንድን ስራ ተረክበን ለደንበኛው የምናስረክብበት ግዜ					
5.4	በኢንተርፕራይዙ ውስጥ አንድ ምርት ተመርቶ ሌላ ምርት እስከሚመረትበት ያለው ጊዜ					
5.5	በምርት ሀደት ውስጥ አንድን የሚመረት ምርት ከአንድ ቦታ ወደሌላ ቦታ የምናስተላልፍበት ጊዜ					
6	ከሰራተኞች ጋር በተያያዘ ያለው ሁኔታ	1	2	3	4	5
6.1	በኢንተርፕራይዙ ውስጥ ያሉት የሰራተኛ ቁጥር					
6.2	የሰራተኞች የትምህርት ደረጃ ከስራው ጋር ተያያዥነት መኖሩ					
6.3	የሰራተኞች የስራ ተነሳሽነት					
6.4	የሰራተኞች መፍትሄ የማመንጨት ብቃታቸው					
6.5	የሰራተኛው ክፍያና ጥቅማጥቅም					
7	ሰባቱን የምርት ጥራት መቆጣጠርያ መሳርያዎች ከመጠቀም አኳያ ምን ይመስላል	1	2	3	4	5
7.1	ቼክ ሽት የመጠቀም ሁኔታ					
7.2	ሂስቶ ግራም የመጠቀም ሁኔታ					
7.3	ፓሪቶ ዳግራም የመጠቀም ሁኔታ					
7.4	ፊሽ ቦን ዲያግራም የመጠቀም ሁኔታ					
7.5	ስካተር ዲያግራም የመጠቀም ሁኔታ					
7.6	ፍለው ቻርት የመጠቀም ሁኔታ					
7.7	ኮንትሮል ቻርት የመጠቀም ሁኔታ					

ክፍል 3

በሰንጠረዡ ውስጥ ለተጠቀሱት ሀሳበች የእርሰን የስምምነት ደረጃ የሚገልፀውን አማራጭ በመምረጥ በባዶ በታዎች ውስጥ ምልክት በማድረግ መልሱ

ደረጃ፡ (5) በጣም እስማማለሁ፣ (4) በተወሰነ እስማማለሁ (3) አላቅም፣ (2) በተወሰነ አልስማማም እና (1) በጣም አልስማማም

ተ.ቁ	አረፍ-ተነገር	በጣም አልስማማም	በተወሰነ አልስማማም	*አስማማለሁ*	*በተወሰነ እስማማለሁ*	በጣም እስማማለሁ
1	የቴክኒክና ሙያ የድጋፍ መቆራረጥ ለካይዘን አለመተግበር ምክንያት ነው					
2	ካይዘንን ለመተግበር በቂ ግብአቶችአ አለማግኘት					
3	የቴ/መ/ት/ስ/ተቋማቶች አሰልጣኞች በሾፓችሁ ውስጥ ካይዘን እንዲተገበር ያደርጋሉ					
4	ካይዘን አንድን ወሳኔ ለመወሰን እድል ይፈጥራል					
5	ካይዘን በስራ ቦታ አወንታዊ ውጤት አለው					
6	የካይዘን ትግበራ ጥራት ያለውን ምርትና አገልግሎትን በውጤታማነት ለማረጋገጥ ያስችላል					

ምንጭ: በ 2018 ከተጠያቂዎች ተሞልቶ የተገኘ መጠይቅ

ክፍል አራት

4.1. ከኢንተርፕራይዞች ባለቤቶች/ አንቀሳቃሾች በካይዘን አተገባበር ላይ ያለውን ችግር በይበልጥ የሚገልፀው ላይ ላይ ቲክ አድርጉ

ደረጃ፡(5) በጣም ጥሩ የስልጠና ይሰጣል፣ (4) ጥሩ የስልጠና ይሰጣል ፤ (3) ምክናታዊ ስልጠና ይሰጣል፣(2) በቂ ስልጠና አይሰጥም እና (1) ምንም ስልጠና አይሰጥም

ተ.ቁ	አረፍተ-ነገር	ምንም ስልጠና አይሰጥም	በቂ ስልጠና አይሰጥም	በከፊል ስልጠና ይሰጣል	በቂ ስልጠና ይሰጣል	በጣም ጥሩ የስልጠና ይሰጣል
1	ካይዘን ስልጠና ተከታታይነት ባለው መልኩ ለሰራተኞች መሰጠቱ					
2	በቴክኒክና ሙያ አሰልጣኞች የሚሰጠው የካይዘን ስልጠና በቂ ነው					
3	በጥቃቅንና አነስተኛ ቢሮ የሚሰጠው የካይዘን ስልጠና በቂ ነው					
4	በኢትዮጲያ ካይዘን ኢንስቲቱዩት የሚሰጠው የካይዘን ስልጠና በቂ ነው					

ምንጭ: በ 2018 ከተጠያቂዎች ተሞልቶ የተገኘ መጠይቅ

በኢንተርፕራይዝ ባለቦቶችና አንቀሳቃሾች የሚሞላ መጠይቅ

4.2 ከኢንተርፕራይዞች ባለቤቶች እና አንቀሳቃሾች በካይዘን አተገባበር ላይ ያለውን ችግር በይበልጥ የሚገልፀው ላይ ላይ ቲክ አድርጉ

ደረጃ፡ (5) በጣም ጥሩ ፣ (4) ጥሩ ፤ (3) በቂ፣(2) ዝቅተኛ እና (1) በጣም ዝቅተኛ

ተ.ቁ	አረፍ-ተነገር	በጣም ጥሩ	ጥሩ	በቂ	ዝቅተኛ	በጣም ዝቅተኛ
1	የሰራተኞች እንቅስቃሴ ካይዘንን ከመተግበር አኳያ በስራ ቦታችሁ እንዴት ይገለጻል?					
2	ካይዘንን ከማላመድና ከማስቀጠል አኳያ እንዴት ይታያል?					
3	የካይዘን ትግበራ በሾባችሁ ያመጣው ለውጥ					
4	የካይዘንን አተገባበር እንዴት ይለኩታል?					
5	የኢንተርፕራይዙ ባለቤትና ሰረተኞች ደስታ ከካይዘን ትግበራ ቡኋላ					

ምንጭ: በ 2018 ከተጠያቂዎች ተሞልቶ የተገኘ መጠይቅ

ክፍል 5.

1.1 የሚከተሉትን ጥያቄዎች አሁን ባለው የጥቃቅንና አነስተኛ ኢንተርፕራይዝ የከይዝን የምርት ማሻሻያ መሳርያ /የከይዘን አተገባበር/ መሰረት ትክክለኛን መልስ ምረጡ

1. የከይዘን አተገባበር ስኬት ምንድነው ?

   1) ጥሩ የስራ ቦታ መፍጠር 2) የአመለካከት ለውጥ ማምጣት 3) የማርታማነትን መጨመር 4) ሁሉም 5) ሌላ ካለ --------

2. ከካይዘን ትግበራ ቡኋላ የምርት ሂደቱ

   1) በጣም ዝቅተኛ 2) ዝቅተኛ 3) መካከለኛ 4) ከፍተና 5) በጣም ከፍተኛ

APPENDIX 2.

Addis Ababa University

School of Graduate Studies

College of Education and Behavioral Studies

Department of Curriculum and Instruction

Post Graduate Program in Management of Vocational Education

Dear respondents, I. Your participation in the study is completely voluntary. I am Kinfe Adere and postgraduate student of the above mentioned University and currently undertaking a research on “Practice and Challenges of in the Application of Kaizen” taking Arada and Yeka sub-city MSEs in manufacturing area as study. Your enterprise is chosen for the research studying

The attached questionnaire and interviews are designed to assess the practices and challenges in the application of kaizen at Arada and Yeka subcity in selected kaizen supported micro and small enterprises in specific of manufacturing sector. I would appreciate if you could help me by responding to the attached questionnaire.

For this purpose data will be collected through questionnaire and interview. The survey data will be analyzed on a collective basis hence confidentiality is maintained. The information you share with me will not be shared for any one and secured at most confidentiality and your personal identity will be kept in secret.

Thank you for your assistance

Part 1

1. about enterprise

1.1. Name of enterprise_____

1.2. Sex of respondent male _____ female _____

1.3. Age of respondent _____

1.4. Area of enterprise engaged_____

1.5. Establishment year_____

2. Rank of enterprise:

2.1.Starter_____

2.2.Medium_____

2.3.large_____

3. Number of workers in academic

3.1 degree_____

3.2 diploma _____

3.3 From Level 1-5_____

3.4 Below grade 12_____

4. Service of enterprise in year

4.1. 1-3 years---------

4.2. 4-7 years----------

4.3. 8-11 years---------

4.4. Above 12 years----------

Part two

2.1. Questionnaire fulfilled by enterprise owners and operators on practice of kaizen

Please read each statement carefully and choose the answer corresponds and put tick(✓) mark in only space provided for each questions from options in the table below based on your level of agreement or disagreement in the following rating scale to show your agreement or disagreement

The option represents

- Putting "✓" in column "5" if you very high.
- Putting "✓" in column "4" if you high.
- Putting "✓" in column "3" if you average.
- Putting "✓" in column "2" if you low.
- Putting "✓" in column "1" if you very low.

Sn 1	measure the 5 s activities through scales above mentioned	1	2	3	4	5
1.1	**Sort:-** If the enterprise sort what is needed and not needed the work place					
1.2	**Set in order：-** If the enterprise set in order what must be kept. Make things visible.					
1.3	**Shine：-** If the enterprise shines everything that remains. Clean and paint to provide a pleasing appearance.					
1.4	**Standardize: -** If the enterprise standardization and self-discipline.					
1.5	**Sustainable: -** If the enterprise sustain the clean/check routine.					
2	Standardization: - It is important to be seen that each one employee follows his own PDCA cycle. An example of	1	2	3	4	5

	Kaizen PDCA cycle could be?					
2.1	PLAN: - the company understanding the current status and setting objectives and analyzing the data in order to identify root causes.					
2.2	DO: - during manufacturing process the company establishing countermeasures based on the data analysis.					
2.3	CHECK: - confirming the effects of the countermeasures in the company.					
2.4	ACT: - establishing or revising the standards to prevent recurrences and reviewing the above processes and working on the next steps.					
3	Waste reduction: during operating kaizen in the shop; there will be wastes that are eliminated. How do you rate these wastes in your own work area?	1	2	3	4	5
3.1	Waste from over production					
3.2	Waste from waiting of workers					
3.3	Waste from motion of workers					
3.4	Waste from inventory					
3.5	Waste from transportation					
3.6	Waste from processing					
3.7	Waste from defect making					
4	Quality Related Factors	1	2	3	4	5
4.1	Quality commitment of management					
4.2	Poor quality of product					
4.3	Customer compliant					
4.4	Mechanisms to solve complain					
4.5	Total Quality Control tool application					
4.6	Producing materials based on customer need					
5	Working Time Related Factors	1	2	3	4	5
5.1	The time taken to produce a single product within a day					

	in the shop					
5.2	Preparing of machines for producing of products per a day with in the shop					
5.3	Waiting of the enterprise to produce for customers					
5.4	The time taken to produce one material and the next materials in the shop					
5.5	Transfer time of materials to arrange within the shop					
6	Labor and perception of enterprise owners	1	2	3	4	5
6.1	The number of workers in the enterprise that fit the job					
6.2	Educational status of workers					
6.3	Commitment of workers					
6.4	Solution making status of workers					
6.5	Level of the enterprise owner's perception (believe) on the importance of kaizen implementation in the SMEs					
7	Seven quality control circle related factors	1	2	3	4	5
7.1	Using of Check Sheet					
7.2	Using of Histogram					
7.3	Using of Pareto Analysis					
7.4	Using of Fishbone Diagram					
7.5	Using of Scatter Diagram					
7.6	Using of Flowchart					
7.7	Using of Control Chart					

Source: Questionnaires filled in March 2018 and (henok, 2016)

Part Three

A Questionnaire fulfilled by enterprise owners /operators on practice of kaizen

Please tick your response that best describe the statement.

Please read each statement carefully and choose the answer corresponds and put tick(✓) mark in only space provided for each questions from options in the table below based on your level of agreement or disagreement in the following rating scale to show your agreement or disagreement

The option represents

- Putting "✓" in column "5" if you strongly agree.
- Putting "✓" in column "4" if you agree.
- Putting "✓" in column "3" if you neutral agree.
- Putting "✓" in column "2" if you dies agree.
- Putting "✓" in column "1" if you strongly disagree**.**

Scales 1=strongly disagree 2=disagree 3=neutral 4= agree 5=strongly agree

No	Statement	Strongly disagree	Somewhat disagree	agree	Somewhat agree	Strongly agree
1	Lack of coordination, communication and integration with TVET cause poor Kaizen implementation					
2	Facilities and accommodations were conducive to the implementation					
3	TVET trainers implementation of kaizen at your shop					
4	Kaizen provides opportunity to participants in decision making					
5	Kaizen had a positive effect on work area					
6	Kaizen implementation brought quality products and services in terms of efficiency and effectiveness					

Source: Questionnaires filled in March 2018.

Part four A. Questionnaire fulfilled by enterprise owners and operators on challenges of kaizen

Please tick your response that best describe the statement

The option represents

- Putting "✓" in column "5" if you Very good training program.
- Putting "✓" in column "4" if you Good training program.
- Putting "✓" in column "3" if you Reasonable training program.
- Putting "✓" in column "2" if you Not quite enough.
- Putting "✓" in column "1" if you Not really**.**

Scales 1= Not really 2= Not quite enough 3= Reasonable training program 4= Good training program 5= Very good training program

No	Statement	1 Not really	2 Not enough	3 Partially training program	4 Good training program	5 Very good training program
1	Do you think your enterprise has got interrupted employee training program on kaizen?					
2	The training which are given by TVET trainers are enough					
3	The training which are given by SME office are enough					
4	The training which are given by AAKI are					
5	The training which are given by NOGs enough					

Source: Questionnaires filled in March 2018.

B. Opinion of Enterprise owners and operators on the difficulty of Kaizen implementation practice and reporting result

Please tick your response that best describe the statement

The option represents

- Putting "✓" in column "5" if you Very.
- Putting "✓" in column "4" if you good.
- Putting "✓" in column "3" if you fair.
- Putting "✓" in column "2" if you poor.
- Putting "✓" in column "1" if you very poor**.**

Scales 1= very poor 2= poor 3= fair 4= Good program 5= Very Good

No	Statement	Very Poor	Poor	Fair	Good	Very Good
1	To what extent the worker involvement in Kaizen programs in your workplace can be explained					
2	Adoption of kaizen implementation to sustain long-term continuous improvement					
3	Implementation of kaizen in your shop brings desire out put					
4	How you can measure the practice of kaizen in your shop?					
5	Satisfaction of enterprise owner and operators after kaizen implementation					

Source: Questionnaires filled in March 2018.

Part five

Choice your best answer based on current productivity improvement practice and challenges in the application of kaizen of small micro and micro enterprise through implementation of kaizen:

1. Success of kaizen implementation results

   1) Good working environment 2) brings attitudinal change 3) increase productivity 4) All E others specify --------

2. Increasing of productivity after implementation of kaizen.

   1) Very low 2) Low 3) Average 4) high E very high

APPENDIX 3.

Interview guide for Deans and Vice –Deans.

The purpose of this interview is to gather data about practice and challenges in the application of kaizen program with particular reference to Arada manufacturing challenges, aware TVET institute Misrak Polytechnic College, Ferensay and Kotebe TVET institute in Addis Ababa respectively.

1. Name of the College----------

2. Sex: Male ---------- Female ----------

3. Service year ----------

A. 1-3 years---------

B. 4-7 years----------

C. 8-11 years---------

D. Above 12 years----------

4. Qualification: MA/MSC ---------- BA/BSC -------- Other

5. What are the stakeholders your college working with to implement the industry extension service package? ----------
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6. On behalf of your college or institution what are the main challenges of kaizen implementation Service? ----------
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7. What are the opportunities that support and motivate kaizen implementation according to your opinion?----------
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8. Even though the kaizen implementation program is on its infant stage, can you mention some of its success and challenge indicators? ----------
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Any idea that you want to mention concerning kaizen implementation with related to (stakeholders like trainers, TVET deans/vice deans, SMEs, EKI, kaizen coordinators, government, private sector…….

APPENDIX 4.

Interview Guide for Sub-city SMEs Officials

1) Name of the MSE office----------
2) Sex: Male ---------- Female ----------
3) Service years

A. 1-3 years---------

B. 4-7 years----------

C. 8-11 years---------

D. Above 12 years----------

4) Qualification: MA/MSC ----------BA/BSC ---------- other
5) Do you think the implementation of the kaizen implementation program is on the line of success up to now according to its implementation procedure? If it is that, can you mention its success indicators? ----------
   ----

   ----
6) What are the main challenges of kaizen implementation program while it is implemented? ----------
   ----

   ----

7) How you can motivate these enterprises to implement kaizen philosophy as it increase productivity?----------
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8) Do you think that you have good linkage with kaizen implementation sector like TVET, kaizen institutions even with enterprise also?----------
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9) Did you prepare a market display linkage for the enterprises products?----------
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10) How do you evaluate the outcome of Kaizen program implementation on the general work culture? ----------
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APPENDIX 5.

Interview Guiding Questions for Addis Ababa Kaizen Institute Official's

1. Name of the MSE office----------

2. Sex: Male ---------- Female ----------
3. Service years

A. 1-3 years---------

B. 4-7 years----------

C. 8-11 years---------

D. Above 12 years----------

4. Qualification: MA/MSC ----------BA/BSC ---------- other

1. Why Kaizen philosophy was preferred to speed up the industry and manufacturing sector performance? ----------
   ----

   ----
2. In which sector kaizen philosophy more applicable? Why?----------
   ----

   ----
3. How do you evaluate the outcome of Kaizen program implementation on the general work culture? ----------
   ----

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4. What are the major achievements of the Kaizen program implementation?----------

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---

5. What are the challenges and practice encountered during KAIZEN program implementation?----------

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6. What solutions and recommendations would you suggest for these enterprises challenges encountered?----------

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7. To what extent do the kaizen system has been practiced and implemented in Micro Small Enterprises?----------

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APPENDIX 6.

Interview for sampled TVETs kaizen coordinators/ supervisors.

The purpose of this interview is to gather data about practice and challenges in the application of kaizen program with particular reference to Arada manufacturing challenges, aware TVET institute Misrak Polytechnic College, Ferensay and Kotebe TVET institute in Addis Ababa respectively.

1. Name of the College----------

2. Sex: Male ---------- Female ----------

3. Service years

A. 1-3 years---------

B. 4-7 years----------

C. 8-11 years---------

D. Above 12 years----------

3. Qualification: MA/MSC ----------BA/BSC ---------- other

4. Qualification: MA/MSC ---------- BA/BSC -------- Other

5. What did you observe during kaizen implementation at small micro enterprise shop? --
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6. What are the main challenges of kaizen implementation Service? ----------
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---

7. What are the opportunities that support and motivate kaizen implementation according to your opinion?----------

---

---

8. Even though the kaizen implementation program is on its infant stage, can you mention some of its success and challenge indicators? ----------

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9. Any idea that you to mention concerning kaizen implementation with related to (stakeholders like trainers, TVET deans/vice deans SMEs. EKI, kaizen coordinators, government ----------

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APPENDIX 7.

Inter-item correlation matrix of all variables

Inter-Item Correlation Matrix

	Sort:- If the enterprise sort what is needed and not needed the work place	Set in order: - If the enterprise set in order what must be kept. Make things visible.	Shine: - If the enterprise shines everything that remains. Clean and paint to provide a pleasing appearance.	Standardize: - If the enterprise standardization and self-discipline.	Sustainable: - If the enterprise sustain the clean/check routine
Sort:- If the enterprise sort what is needed and not needed the work place	1.000	.913	.879	.871	.816
Set in order: - If the enterprise set in order what must be kept. Make things visible.	.913	1.000	.902	.883	.836
Shine: - If the enterprise shines everything that remains. Clean and paint to provide a pleasing appearance.	.879	.902	1.000	.886	.871

Standardize: - If the enterprise standardization and self-discipline.	.871	.883	.886	1.000	.917
Sustainable: - If the enterprise sustain the clean/check routine	.816	.836	.871	.917	1.000

Inter-Item Correlation Matrix

	PLAN: - the company understanding the current status and setting objectives and analyzing the data in order to identify root causes.	DO: - during manufacturing process the company establishing countermeasures based on the data analysis.	CHECK: - confirming the effects of the counter measures in the company.	ACT: - establishing or revising the standards to prevent recurrences and reviewing the above processes and working on the next steps.
PLAN: - the company understanding the current status and setting objectives and analyzing the data in order to identify root causes.	1.000	.874	.884	.866

DO: - during manufacturing process the company establishing countermeasures based on the data analysis.	.874	1.000	.946	.890
CHECK: - confirming the effects of the countermeasures in the company.	.884	.946	1.000	.889
ACT: - establishing or revising the standards to prevent recurrences and reviewing the above processes and working on the next steps.	.866	.890	.889	1.000

Inter-Item Correlation Matrix

	Waste from over production	Waste from waiting of workers	Waste from motion of workers	Waste from inventory	Waste from transportation	Waste from processing	Waste from defect making
Waste from over production	1.000	.806	.826	.819	.907	.898	.824
Waste from waiting of workers	.806	1.000	.939	.907	.874	.891	.924
Waste from motion of workers	.826	.939	1.000	.868	.900	.873	.975
Waste from inventory	.819	.907	.868	1.000	.873	.902	.878
Waste from transportation	.907	.874	.900	.873	1.000	.947	.917
Waste from processing	.898	.891	.873	.902	.947	1.000	.896

Waste from defect making	.824	.924	.975	.878	.917	.896	1.000

Inter-Item Correlation Matrix

	Quality commitment of management	Poor quality of product	Customer compliant	Mechanisms to solve complain	Total Quality Control tool application
Quality commitment of management	1.000	.952	.890	.917	.861
Poor quality of product	.952	1.000	.896	.908	.822
Customer compliant	.890	.896	1.000	.927	.868
Mechanisms to solve complain	.917	.908	.927	1.000	.926
Total Quality Control tool application	.861	.822	.868	.926	1.000

Inter-Item Correlation Matrix

	Producing materials based on customer need	The time taken to produce a single product within a day in the shop	Preparing of machines for producing of products per a day with in the shop	Waiting of the enterprise to produce for customers	The time taken to produce one material and the next materials in the shop	Transfer time of materials to arrange within the shop

Producing materials based on customer need	1.000	.940	.938	.918	.976	.925
The time taken to produce a single product within a day in the shop	.940	1.000	.916	.901	.926	.905
Preparing of machines for producing of products per a day with in the shop	.938	.916	1.000	.984	.930	.905
Waiting of the enterprise to produce for customers	.918	.901	.984	1.000	.937	.907
The time taken to produce one material and the next materials in the shop	.976	.926	.930	.937	1.000	.940
Transfer time of materials to arrange within the shop	.925	.905	.905	.907	.940	1.000

Inter-Item Correlation Matrix

	The number of workers in the enterprise that fit the job	Educational status of workers	Commitment of workers	Solution making status of workers	Payment and benefit of workers
The number of workers in the enterprise that fit the job	1.000	.893	.903	.888	.872

Educational status of workers	.893	1.000	.877	.839	.853
Commitment of workers	.903	.877	1.000	.876	.857
Solution making status of workers	.888	.839	.876	1.000	.890
Payment and benefit of workers	.872	.853	.857	.890	1.000

Inter-Item Correlation Matrix

	Lack of coordination, communication and integration with TVET cause poor Kaizen implementation	Facilities and accommodations were	TVET trainers implementation of kaizen At your shop	Kaizen provides opportunity to participants in decision making	Kaizen had a positive effect on work area	Kaizen implementation brought quality products and services in terms of efficiency and effectiveness
Lack of coordination, communication and integration with TVET cause poor Kaizen implementation	1.000	.786	.886	.874	.817	.839

Facilities and accommodations were	.786	1.000	.821	.715	.752	.664
TVET trainers implementation of kaizen At your shop	.886	.821	1.000	.882	.808	.811
Kaizen provides opportunity to participants in decision making	.874	.715	.882	1.000	.897	.887
Kaizen had a positive effect on work area	.817	.752	.808	.897	1.000	.898
Kaizen implementation brought quality products and services in terms of efficiency and effectiveness	.839	.664	.811	.887	.898	1.000

Inter-Item Correlation Matrix

	To what extent the worker involvement in Kaizen programs in your workplace can be explained	Adoption of kaizen implementation to sustain long-term continuous improvement	Implementation of kaizen in your shop brings desire out put	How you can measure the practice of kaizen in your shop?	Satisfaction of enterprise owner and operators after kaizen implementation
To what extent the worker involvement in Kaizen programs in your workplace can be explained	1.000	.837	.855	.918	.805

Adoption of kaizen implementation to sustain long-term continuous improvement	.837	1.000	.803	.840	.780
Implementation of kaizen in your shop brings desire out put	.855	.803	1.000	.849	.857
How you can measure the practice of kaizen in your shop?	.918	.840	.849	1.000	.851
Satisfaction of enterprise owner and operators after kaizen implementation	.805	.780	.857	.851	1.000

Inter-Item Correlation Matrix

	Do you think your enterprise has got interrupted employee training program on kaizen?	Are the training which given by TVET trainers enough?	The training which are given by SME office are enough	The training which are given by AKI are
Do you think your enterprise has got interrupted employee training program on kaizen?	1.000	.848	.941	.490
Are the training which given by TVET trainers enough?	.848	1.000	.892	.364

The training which are given by SME office are enough	.941	.892	1.000	.422
The training which are given by AKI are	.490	.364	.422	1.000

Inter-Item Correlation Matrix

	Kaizen tools/ techniques/practices have you applied on your workplace?	Do you think you and your friends have adequate knowledge of kaizen?	do you think the Enterprise Kaizen implementation plan, goals and values are communicated effectively to all the relevant people?	were the main challenges during kaizen practice in your shop?	Success of kaizen implementation results	Increasing of productivity after implementation of kaizen	How do you rate the impleme ntation of kaizen tool in your shop?
Kaizen tools/ techniques/practices have you applied on your workplace?	1.000	.740	.643	.940	.833	.726	.889
Do you think you and your friends have adequate knowledge of kaizen?	.740	1.000	.580	.787	.542	.800	.861

do you think the Enterprise Kaizen implementation plan, goals and values are communicated effectively to all the relevant people?	.643	.580	1.000	.622	.631	.707	.665
were the main challenges during kaizen practice in your shop?	.940	.787	.622	1.000	.690	.717	.833
Success of kaizen implementation results	.833	.542	.631	.690	1.000	.748	.808
Increasing of productivity after implementation of kaizen	.726	.800	.707	.717	.748	1.000	.848
How do you rate the implementation of kaizen tool in your shop?	.889	.861	.665	.833	.808	.848	1.000

APPENDIX 8. FIGURATIVE MATERIALS

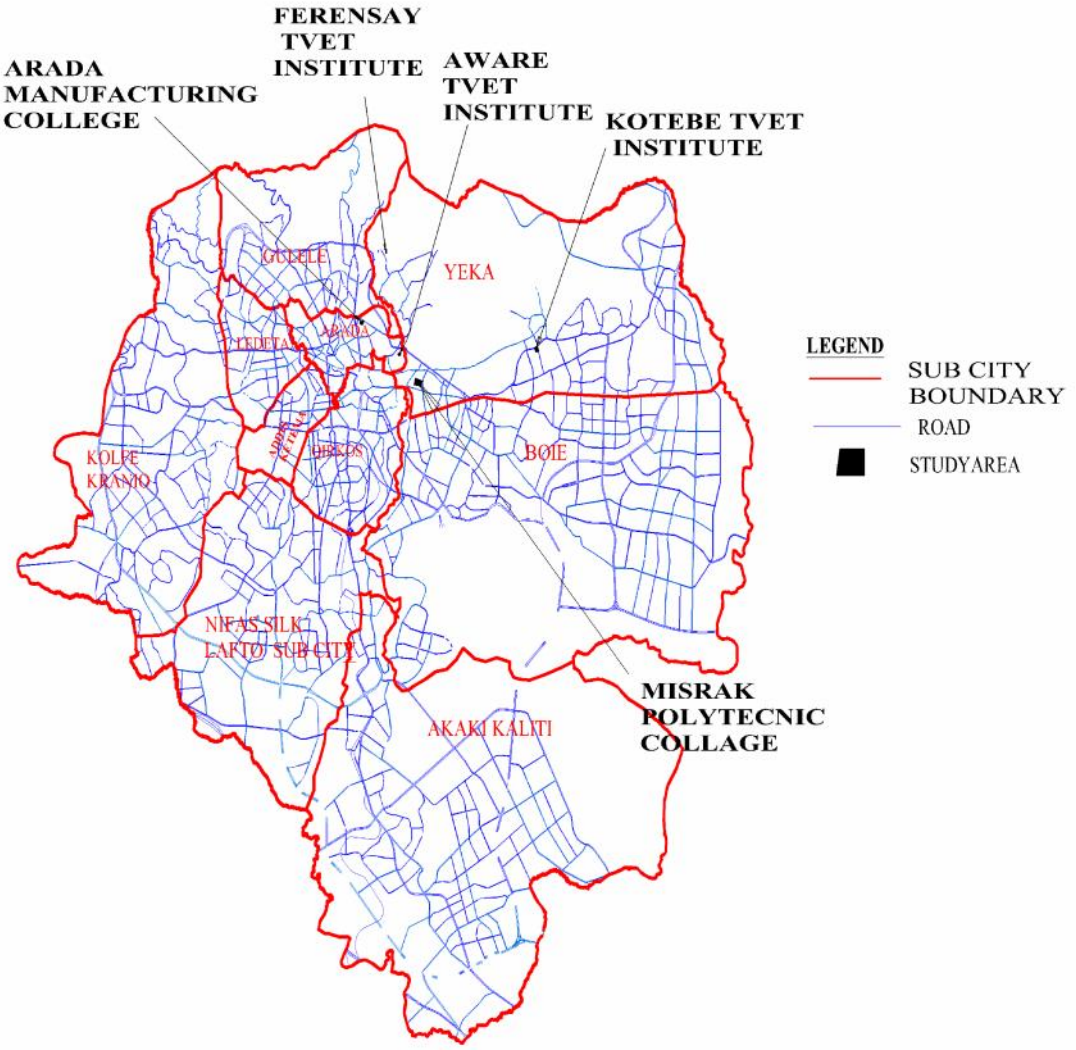
Before kaizen implementation After kaizen implementation

Photograph presentation of before and after kaizen implementation

Source: Kibru and Tatek garment enterprise, 2018

Structures of AAKI

ምንጭ፡ የአዲስ አበባ ከተማ አስተዳደር ከይዘን ኢንስቲትዩት ደንብ ቁጥር 77/2016



The Study area

Source: - Addis Ababa master plan for key land use indicator 2009