



ADAMA SCIENCE AND TECHNOLOGY UNIVERSITY
SCHOOL OF EDUCATIONAL SCIENCE & TECHNOLOGY TEACHERS EDUCATION
DEPARTMENT OF EDUCATIONAL LEADERSHIP & MANAGEMENT

FACTORS AFFECTING THE SUSTAINABILITY OF KAIZEN IMPLEMENTATION IN
WOLKITE POLY-TECHNIQUE COLLEGE

SULEYEMAN JEMAL

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BY

SULEYEMAN JEMAL

UNDER THE GUIDANCE OF
BEGASHAW MAMUYE (MA.)
DEPARTMENT OF EDUCATIONAL LEADERSHIP & MANAGEMENT
ADAMA SCIENCE AND TECHNOLOGY UNIVERSITY, ADAMA

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ADAMA, ETHIOPIA

Letter of Approval

Adama Science and Technology University school of educational science and technology teachers educations department of educational planning and management. This is to certify that the thesis is prepared by Suleyeman Jemal, entitled “Factors Affecting The Sustainability of Kaizen Implementation in Wolkite Poly-Technique College “:and submitted in partial fulfillment of the requirement for the degree of masters of art in educational leadership. Complies with the regulations of the University and meets the accepted standards with respect to originality.

Approved by Board of Examiners

_____	_____	_____
Advisor	Signature	Date
_____	_____	_____
Department head	Signature	Date
_____	_____	_____
Chair person	Signature	Date
_____	_____	_____
Internal Examiner	Signature	Date
_____	_____	_____
External Examiner	Signature	Date

Declaration

The researcher hereby declares that the thesis in the title, “Factors Affecting the Sustainability of Kaizen Implementation in Wolkite Poly-Technique College” is his original work and that all sources that have been referred to and quoted have been duly indicated and acknowledged with complete references.

Name Suleyeman Jemal Shafi

Signature _____

Date _____

This thesis has been submitted for examination with my approval as the university advisor.

Advisor- Name Begashw Mamuye

Signature _____

Date _____

Place: Adama Science and Technology University School of Educational Science and
Technology Teachers Education Department of Educational Planning and Managemen

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List of Acronyms and Abbreviations

BPR	Business Process Reengineering
BSC	Balanced Score Card
CPD	Continuing Professional Development
CSA	Central Statistical Authority
CWQC	Company Wide Quality Control
EKI	Ethiopian Kaizen Institute
ESDP	Education Sector Development Program
ETB	Ethiopians Birr
FeMSEDA	Federal Micro and Small Enterprise Development Agency
FeMoE-	Federal Ministry of Education
FeTA	Federal TVET Agency
GDP	Gross Domestic Product
GRIPS	National Graduate Institute for Policy Studies
IFC	International Finance Corporation
ILO	International Labor Organization
ISO	International Organization for Standardization
JICA	Japan International Cooperation Agency
JIKA	International Cooperation Agency
JIT	Just in time
KAM	Kenya Association of Manufacturers
MEB	Small Business and Enterprises
MoE	Ministry of Education
MoI	Ministry of Industry
MoUDC	Ministry of Urban Development and Construction
MSEs	Micro and small Enterprises
OVOP	One Village One Product
PASDEP	Plan for Accelerated and Sustained Development to End Poverty
PDCA	Plan-Do-Check-Act
PCK	Productivity Centre of Kenya
PPESA	Privatization and Public Enterprise Supervising Agency
QC	Quality Circle
QCC	Quality Control Circle

ReMSEDAs	Regional Micro and Small Enterprise Development Agencies
ReTAs	Regional TVET Agencies
RR	Reward & Recognition
SDCA	Standardize/ Maintain-Do-Check-Act
SME	Small and Medium Enterprises
SNNPR-	Southern Nations, Nationalities and Peoples Region
TPM	TPM- Total Productive Maintenance
TPS	Toyota Production Systems
TQC	Total Quality Control
TQM	Total Quality Management
TVET	Technical Vocational Education and Training
TVETI	Technical Vocational Education and Training Institute
TQM	Total Quality Management
TWI	Training within Industry
5S	Sort, Shine, Set in order, Standardize and Sustain

Abstract

The purpose of the study was to assess factors affecting sustainability of Kaizen implementation in Wolkite Poly-Technique College. To achieve the purpose of the study, descriptive survey design was employed. The participants of the study were 120 trainers, 7 departments' heads 7 shop assistance, 9 supportive, 7 core process owner and officer staff member and 6 general service coordinators of Wolkite Poly-Technique Colleges. Out of 233 target population a total of 156 respondents were included in the study. The College was selected using purposive sampling method, because it is the only College implement kaizen full and selected by Ethiopian kaizen institute(EKI) as model at that time. Trainers, department heads and shop assistance were selected by simple random sampling methods while core process owners and supportive administrative staff members were selected by purposive sampling method, because they are coordinators they have better information than worker at bottom level. Data collected from the primary sources, and secondary sources. The primary data was collected using semi-structured interviews, questionnaires, and observations. Secondary data were also obtained from available documents at Wolkite Poly-technique College, reports and minute to enrich the data obtained from primary source. An approach of both quantitative and qualitative data collection methods were used to collect data from 131 respondents through questionnaires and from 22 informants using semi-structured interviews and document analysis. The quantitative data were analyzed through descriptive statistics with SPSS Version 20. Data obtained through interview and document analysis were analyzed using thematic analysis. The findings of the research showed that the respondents has positive attitude on the benefits of kaizen implementation and there were success in Wolkite Poly-Technique College but there had been factors affecting sustainability of kaizen implementation which emanated from various sources, like gaps in knowledge of executives, trainers and employees; gaps on appropriate buildings and material resources; and gaps in the capacity and capabilities of the management body. There were no adequate administrative supports, feedbacks and encouragement for smooth operation of Kaizen. On the other hand, lack of reward and recognition was another problem to sustain the implementation. The strategies suggested should be implemented to address those affecting factors in various socio-economic contexts at different levels. Therefore, the responsible bodies should consider those findings as good lessons and effectively address the factors affecting the sustainability of kaizen identified. Thus, it is recommended that in order to be successful ,TVET Colleges should implement kaizen sustaining mechanisms as a strategy.

Chapter One

Introduction

This chapter deals with the background of the study, statement of the problem, objectives of the study, significance of the study, delimitation of the study, limitation of the study, operational definition of key terms and organization of the study

1.1. Background of the Study

The Kaizen management originates in the best Japanese management practices and is dedicated to the improvement of productivity, efficiency, quality and, in general, of business excellence. The Kaizen methods are internationally acknowledged as methods of continuous improvement, through small steps of the economical results of companies. The small improvements applied to key processes will generate the major multiplication of the company's profit while constituting a secure way to obtain the clients fidelity (Romania, 2008)

Kaizen has become a global activity spread by multinational companies and their employees. It has become popular not only in the manufacturing sector but also in the service sector. However, propagation of kaizen in Africa is still very small due to the limited number of players who bring in the practice. Since individual companies cannot be a major force in transferring kaizen, the activities of organizations are considered vital in transferring the kaizen method to Africa (GRIPS Development Forum, 2009).

Different countries in the world applied Kaizen Management techniques as a tool to increase effectiveness, efficiency, Productivity, quality and to decrease wastages. The application of Kaizen Costing as a tool of efficiency in production cost at Coca Cola Bottling Company in Indonesia has been practiced (Utari, 2011). In Canada, there is an application of Continuous Improvement (CI) of Kaizen philosophy which consists of improvement initiatives that increase successes and reduce failures (Bhuiyan and Baghel, 2005). In the same light, Becker and Snow (1997) found out that the United States of America has used the Deming Management Method or the Total Quality Management (TQM) of the Kaizen Techniques.

According to National Graduate Institute for Policy Studies (GRIPS) Development Forum publication (2011), kaizen was driven by strong commitment of the top leader. During the two-year period of Japan International Cooperation Agency (JICA) support(on the study Quality and Productivity Improvement in Ethiopia, from October 2009 to May 2011), pilot company projects were implemented, and their results have been disseminated; the JICA experts conducted

training for the staff of the Kaizen unit of Ministry of Industry (MOI) to transfer relevant skills and techniques; and a national plan has been formulated to disseminate kaizen activities for manufacturing companies. As a result, kaizen has come to be known among policy makers and business managers in Ethiopia. Based on these achievements, the Ethiopian government has decided to establish a core organization responsible for quality and productivity improvement, EKI. JICA has begun new support the institutionalization of the EKI in such areas as organizational development, human resource development, and nationwide dissemination of Kaizen.

Dissemination route of kaizen through vocational institutions shall be vital. Vocational institutions provide for a wider array of beneficiaries among workers in the manufacturing sector than in other types of institutions in Africa (Sanyu Consultants Inc. and KRI International Corporation, 2008).

To achieve PASDEP (Plan for Accelerated and Sustained Development to End Poverty) and solve the socio economic problems, the government of Ethiopia, in collaboration with the Industrial Development Strategy and other sector development strategies, launched a comprehensive capacity building and human capital formation known as the National TVET Strategy. Since the key objective of the PASDEP is to commercialize agriculture and economic growth and development through job creation and reduction of unemployment, TVET (Technical Vocational Education and Training) plays a tremendous role in providing relevant and demand driven education and training that corresponds to the economic and social sector for employment and self-employment (TVET Strategy, 2008 E.C).

The low level of skilled human resource has a significant effect on the development of the industrial sector. Therefore, the country needs to educate and train its workforce to the international standards to increase TVET contribution to the industrial development and on building a culture of entrepreneurship and preparing the people for self employment (Yikunoamlak, 2000).

TVET address the occupational requirements for improved agricultural production and tap the many unexploited off-farm opportunities in rural areas; in the mainly urban formal sector comprising both public and private enterprises. TVET address competence needs in existing companies and provide an adequately competent workforce necessary to attract new investments; the urban and semi-urban micro and small business sector. TVET is geared towards enhancing productivity in the MSE sector, improving the quality of products and services and supporting start-up businesses by providing training and serving as centers for technology transfer; TVET

institutions are mainly expected to replicate new and selected technologies and transfer the same to the relevant industry in order to increase the competitiveness of the sector according to international standards. It's also needed that these technologies focus on creative capacity building and greatly contribute to the economic development of the country in a bid to mitigate regional problems. Their benefit will be significant since the trainees who pass through this process are endowed with outstanding and international workforce ethics (TVET Strategy, 2008 E.C).

To attain the TVET strategy and to be productive, Wolkite Poly-Technique College applies different techniques and methods that are accepted in the international standards. Some of these are ISO and Kaizen.

The College is one of the three model TVET institutes selected by Ethiopian Kaizen Institute (EKI) around the country to introduce Kaizen specially 5S (sort, shine, set in order, standardize and sustain) in 2006 EC. And also the only TVET institute of the region selected by EKI , and takes the award of EKI at the federal level in 2006 EC. As a result the college achieved the mission of the institute well in the easiest manner and, of course, at the lowest costs. For instance, the College increases quality, efficiency effectiveness, productivity and reducing wastages, the college totally save minimum of 2,842,100 Birr and 86.6 % of trainee's become competent in national assessment. This lead to provision of efficient work force to the SME (Small and Medium Enterprises) and large industries. Beside this the college transfers 18 technologies to increase the productivity of SME. Furthermore it gets none measurable benefits (Wolkite Poly-Technique College annual Report, 2014).

It is not too difficult to introduce something new into an organization. The difficult part is how to keep it going and maintain the momentum once it has been introduced. Many companies have tried to introduce kaizen as quality circles, reengineering, and lean production. While some of them have been successful, most have failed to make such a project a going concern. For instance, many Western companies introduced quality circles by involving employees but most companies have simply given up the idea of quality circle activities by now as a way to improve quality, cut cost and speed products to market (Thessaloniki, 2006)

A major obstacle for many organizations is to actually sustain or improve the results of a Kaizen event after it concludes (Friedli, 1999; Mackle, 2000; Cork, 2004). Infact, Laraia (1999) report, many organizations find great difficulty in sustaining kaizen over time, even 50% of the improvements initially realized at the conclusion of the event. Empirical research of Kaizen events suggests that the rate of sustainability may be even lower than 50%. Moreover, in one

recent study, three of the eleven (27%) Kaizen events studied were unable to sustain any of the changes that were implemented during the Kaizen event (Burch, 2008).

Sustaining kaizen event is one of the critical concerns facing Ethiopia. Many organizations including Wolkite Poly-technique College face difficulties to sustain or improve upon the results of a Kaizen event after it concludes. According to EKI supervision team feedback of 2007 E.C., Even though, kaizen - brings tangible result in different TVET institutes; sustaining kaizen event not grow to be continuous activity. And Kaizen office of Wolkite poly-Technique College also reports that it faces difficulties to sustain results of a Kaizen event after it concludes. This practically made the college to decrease in efficiency, quality and productivity.

Therefore, the purpose of this study was to asses factors affecting sustainability of kaizen implementation in Wolkite Poly-Technique College.

1.2. Statement of the Problem

In Ethiopia, there are the practices of both Western and Japanese Management techniques, like Business Process Reengineering (BPR), benchmarking, Balanced Score Card (BSC) and Kaizen (Berihun, 2009). So far, there have been limited and inconclusive studies conducted on the implementation of Kaizen in business organizations at different levels in Ethiopia. Nesra Seid (2012), for example, conducted a quantitative study on the role of the Ethiopian Government in implementing Kaizen as a modern management tool for quality and productivity at Kadisco Chemical Industry in Addis Ababa. The findings of this study indicated that the implementation of the Kaizen policy was found to increase labor productivity by reducing, on average of 50%, time wastage for searching tools; improved a defect ratio which ranged from 50% to 70%; and improved lead time in the range of 16% to 90%. The researcher thus concludes that the implementation of Kaizen at Kadisco Industry has brought those benefits.

Wolkite Poly-technique College is one of the three model TVET institutes selected by EKI around the country to introduce Kaizen specially 5S (sort, shine, set in order, standardize and sustain) in 2006 EC. As a result the college achieved the mission of the institute well in the easiest manner and, of course, at the lowest costs. For instance, by enhancing quality, efficiency effectiveness, productivity and reducing wastages, the college totally save minimum of 2,842,100 Birr and 86.6 % of trainee's become competent in national assessment this lead to provision of efficient work force to the Small and Medium Enterprises (SME) and large industries. Beside this the college transfers 18 technologies to increase the productivity of SME. Furthermore it gets none measurable benefits. (Wolkite Poly-Technique College annual Report, 2006 E.C.).

However, challenges in sustaining kaizen event were one of the critical concerns facing Ethiopia. Many organizations including Wolkite Poly-technique College face difficulties to sustain or improve upon the results of a Kaizen event after it concludes. According to EKI supervision team feedback in 2007 E.C., Even though, kaizen - brings tangible result in different TVET institutes; sustaining kaizen event not grow to be continuous activity. And Kaizen office of Wolkite poly-Technique College also reports that it faces difficulties to sustain results of a Kaizen event after it concludes. This practically made the college to decrease in efficiency; quality, and productivity.

The Kaizen system as new to the country and no research has been done in the Zone and the region on this topic before. So, its implementation and sustainability in TVET Colleges has been facing different problems and encountered by various factors affecting sustainability of kaizen. If these problems and affecting factors are not solved, the attempt of the Government to introduce, implement and sustain Kaizen will remain futile. Furthermore, PASDEP strategy on the part of the College of becomes fruitless.

Thus, factors that have been found to affecting Kaizen sustainability in the College should properly be assessed and effectively addressed. By so doing, the institute move towards efficiency, productivity and quality to achieving the PASDEP on the part of the College.

There are four categories of variables included in the model (Kaizen Event Characteristics, Work Area Characteristics, Post-Event Characteristics, and Sustainability Outcomes). For each category, an explanation regarding how the variables in the category relate to the institutionalizing change models is provided as follow.

Kaizen Event Characteristics: Four Kaizen Event Characteristics that impact Kaizen event outcome sustainability: goal clarity, goal difficulty, team functional heterogeneity, and management support.

Goal clarity is positively related to team member perceptions of their Kaizen capabilities and attitudes toward Kaizen events (Farris, 2006; Farris , 2009). Goal difficulty is positively related to team member perceptions of their Kaizen capabilities and negatively related to goal achievement and team member perceptions of the impact of the Kaizen event on the work area (Farris, 2006; Farris, 2009). Including people from all functions required to implement and sustain results on the Kaizen event team (Bradley and Willett, 2004; Vasilash, 1993; Adams , 1997) .Facilitator participation in decision-making may positively influence team member-participation in decision-making and may positively influence Kaizen event outcomes and sustainability (Burch, 2008) . Management support is positively related to team member

perceptions of the impact of the Kaizen event on the work area and their attitudes toward Kaizen events (Farris, 2006; Farris , 2009). Resource support positively influences Kaizen event outcomes (Devens ., 2008) and sustainability (Bateman, 2005).

Work Area Characteristics: factors that are related to the work area's group learning behaviors, group stewardship, and knowledge of continuous improvement as defined by Groesbeck (2001) and Doolen (2003), as well as routine work area (Farris, 2006) and the changes that may have occurred in the work area since the Kaizen event (e.g., changes to the work area management). Involving everyone on the Kaizen event team in the solution process (Vasilash, 1993) Using Kaizen events to train upper management and key employees on the Kaizen event process as future Kaizen event facilitators (Baker, 2003; White, 2000) Employee turnover negatively influences Kaizen event outcome sustainability (Bateman, 2005; Glover , 2008)

Post-Event Characteristics: The present research identified and measured three Post-Event Characteristics: institutionalizing change, improvement culture, and performance review. The culture of an organization positively influences Kaizen event outcome sustainability (Bateman, 2005). Organization-wide commitment to change (Redding, 1996; Bateman, 2005). Organizational-wide use of Kaizen events positively influences Kaizen event outcome sustainability (Adamson and Kwolek, 2008). 30 days sustainability reviews for Kaizen events (Heard, 1997; Montabon, 2005; Ortiz, 2006). Regular follow-up meetings held after the event to track open action items (Foreman and Vargas, 1999, Palmer, 2001; Martin and Osterling, 2007)

Rewards and recognition for team after the event – e.g., celebrations (Adams , 1997)

Sustainability Outcomes: the research Grove, (2010) identified and measured three technical system outcomes and two social system outcomes: goal sustainability, result sustainability, impact on area sustainability, work area attitude, and work area commitment. All of the outcome variables were adapted from variables originally developed by Doolen (2003) and Farris (2006). These outcomes also relate to the institutionalization models. Goal sustainability and result sustainability relate to the extent to which the change has improved the overall performance of the work area (Buller and McEvoy, 1989). Impact on area sustainability relates to the extent to which the change has a lasting impact on the work area (Buller and McEvoy, 1989). Work area attitude, relates to the extent to which the work area employees like or dislike the change (Goodman and Dean, 1982) and work area commitment refers to the work area employees' belief in the value and need of the change mechanism (Buller and McEvoy, 1989).

Based on detail explanation of the problem mentioned on the background and from the current sustainability literature four variables were included in this study of Kaizen event that impact

the sustainability of Kaizen event outcomes. Therefore, the study explore how Kaizen Event Characteristics, work area characteristics, Post event characteristics and social and technical system characteristics do affects the sustainability of Kaizen event outcomes.

1.3. Basic Research Questions

To answer the aforementioned research problem, the following basic questions were asked.

1. What Kaizen Event Characteristics do affect the sustainability of Kaizen event outcomes in Wolkite Poly-Technique College?
2. What work area characteristics do affect the sustainability of Kaizen event outcomes in Wolkite Poly-Technique College?
3. What Post event characteristics do affect the sustainability of Kaizen event outcomes in Wolkite Poly-Technique College?
4. What social and technical system characteristics do affect the sustainability of Kaizen event outcomes?

1.4. Conceptual Model

Conceptual model of variables relationship; including dependent, intermediate and independent were depicted graphically below.

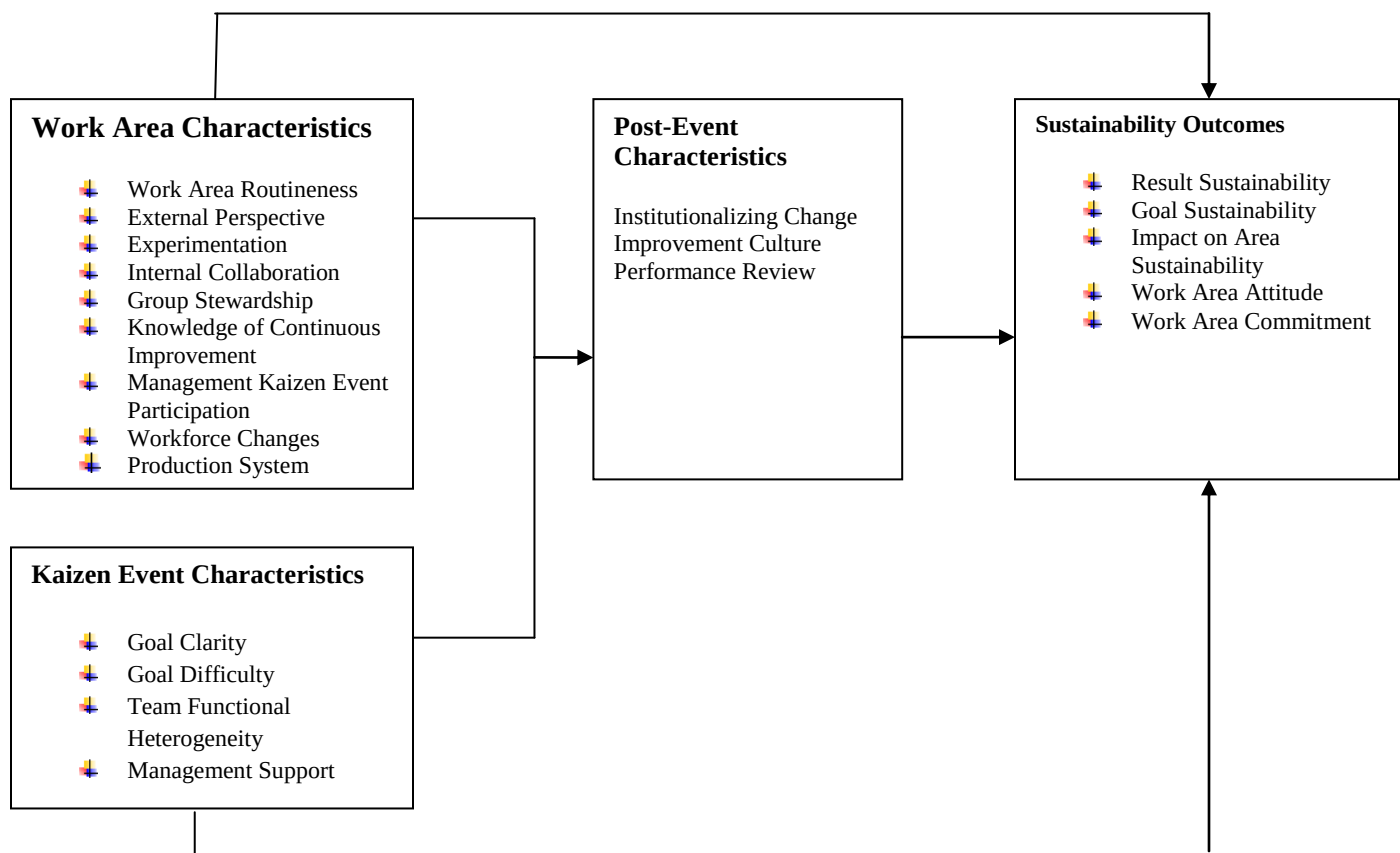


Fig 1 conceptual model of variables

Adopted from “Critical Success Factors for Sustaining Kaizen Event Outcomes” (Glover, 2010, pp. 6)

The conceptual framework shows that relation between four variables. As indicated on the graph the existence of kaizen event characteristics, work area characteristics and post event characteristics confirm the continuation of sustainability outcomes. On the other hand, disappearance of kaizen event characteristics, work area characteristics and post event characteristics not bear out sustainability outcomes.

1.5. Objectives of the study

The research is intended to investigate factors affecting sustainability of kaizen event outcome in Wolkite Poly-Technique College. The specific objectives were to identify:

- ✚ The major Kaizen Event Characteristics affecting the sustainability of Kaizen event outcomes.
- ✚ The work area characteristics affecting the sustainability of Kaizen event outcomes.
- ✚ The Post event characteristics affecting the sustainability of Kaizen event outcomes
- ✚ The social and technical system characteristics affecting the sustainability of Kaizen event outcomes.
- ✚ To suggest the possible remedial solution for responsible bodies.

1.6. Significance of the study

This study thought to be valuable and important for stakeholders such as TVET institutes, Trade and Industry Offices and Bureau, TVET Bureau. Specifically the findings of the study will have the following contributions:

- ✚ The research findings assists TVET institutes in identifying problems that affects sustainability of Kaizen event and to take appropriate measures in order to maintain their effectiveness, productivity, quality, efficiency and decrease wastages.
- ✚ The research results help stakeholders within the TVET programme, mainly researchers, educators and implementers to improve the current practices to sustain the Kaizen implementation.
- ✚ It can become a baseline for further investigation for other researchers that focus on the Kaizen event sustainability.
- ✚ The study can make an important contribution for policy makers or strategy developers of relevant sectors, in the task of identifying the factors affecting sustainability of kaizen events in TVET institutes , and provides a clear picture to include those empirical results in the future policy or strategy.

1.7. Delimitation of the study

The study delimited to SNNPRS, Guragae Zone. The Zone has four public and one NGO based private TVET. These TVET institutions are: Wolkite Polytechnic College, Butajira TVET Center, Agena TVET Institute, Arekit TVET Institute and Emdibir St. Antonios TVET Institute. The researcher confined the study only in Guraghe Zone and Wolkite Poly-Technique College for several reasons.

Firstly, the researcher checked no research has been done in the Zone on the topic before. Secondly, the researcher has experience of two year as focal person on Kaizen activity on the specified College. Thirdly, among the TVET institutes and Colleges in the Region the only institute selected by EKI to implement Kaizen specially 5S, and take the award of EKI at the Federal level in 2006 EC .Finally, since the researcher currently working in the college, offer chance to conduct the research with little constraint of finance and time.

1.8. Limitations of the Study

In conducting this research there were some limitations. The first limitation was difficult to get recent and important literature in sustaining kaizen not only in SNNPR but also in Ethiopia in general. The difficulty of accessing adequate and up-to-date information and references to support the study i.e. lack of books and other related reference materials on the Ethiopian case and on Kaizen issue in University's, lack of comprehensive and systematic study on kaizen and related issues at grass-root levels, even at the national level, lack of network access, lack of budget , there was lack of willingness to actively participate in the study on few of the key informants , trainers (respondents) ran in shortage of time as they were busy in their engagement in the process of production and performing their daily responsibilities in their respective shops and time constraint on the side of the researcher;

However, problems were overwhelmed by the researcher using different mechanisms accordingly, for instance searching sponsor, searching better network areas and downloading relevant books from the internet, using time management mechanisms, endurance to get important information. And so on.

1.9. Operational Definitions of Key Terms

More than one definition may be provided to a single concept this leads to lack of clarities to the meaning of specific words (Corbin & Strauss, 2008). Hence, the researcher has tried to provide operational definitions of the following terms. This is done purposely to make the application of operational term clear.

 **Factors** - Obstacles that could affect sustainability of Kaizen implementation. .

- ✚ **Kaizen:** Kaizen refers to, continuous improvement involving everyone in the organization from top management, to managers then to supervisors, and to workers (Imai, 1986).
- ✚ **Kaizen event outcome :**the result due to implementation of kaizen (5S-sort,set in order, and standardize)
- ✚ **Kaizen Sustainability:** Result sustainability, goal sustainability, impact on area sustainability, work area attitude and work area commitment

1.10. Organization of the Study

This research is organized into five chapters. Chapter one, which is the introduction to the study, includes background to the study, statement of the problem, research questions, objectives of the study, significant of the study, delimitation of the study, limitations of the study, operational definition of key terms and organization of the study. Chapter two review of related literature enclosed in Kaizen. The third chapter describes the research design and methodology, target population and sampling, data collection instruments, methods of data analysis an ethical concerns considered in the study. Fourth chapter presents both quantitative and qualitative data, their analysis, findings and interpretation. Finally, Chapter five puts together summary of major findings of the study, conclusions and recommendations.

Chapter Two

Review of the Related Literature

The chapter provides a theoretical base for the study by reviewing of the related literature pertaining to TVET colleges and concept of kaizen implementation and its sustainability factors. The chapter is organized into major sections. The first section looks conceptual overview and definitions of kaizen, the second section benefit of kaizen, the third part the kaizen philosophy ,the fourth section kaizen versus BPR, the fifth division kaizen experience of Africa, six part continuous and process improvement sustainability literature, the seventh section conceptual framework(model),the finally TVET experience in Ethiopia.

2.1. Conceptual Overview and Definitions of Kaizen

In the decade of 1980, management techniques focusing on employee involvement, and empowerment through teamwork approach and interactive communications and on improving job design were not new, but Japanese companies seemed to implement such techniques much more effectively than others .The business lesson of the 1980's was that Japanese firms, in their quest for global competitiveness, demonstrated a greater commitment to the philosophy of continuous improvement than Western companies did (Bowles,1991). For such a philosophy the Japanese used the term Kaizen. Kaizen means continuous improvement involving everyone in the organization from top management, to managers then to supervisors, and to workers. In Japan, the concept of Kaizen is so deeply engrained in the minds of both managers and workers that they often do not even realize they are thinking Kaizen as a customer-driven strategy for improvement (Imai, 1986).

This philosophy assumes that our way of life – be it our working life, our social life or our home life – deserves to be constantly improved (Imai.1987). There is a lot of controversy in the literature as well as the industry as to what Kaizen signifies. Kaizen is a Japanese philosophy for process improvement that can be traced to the meaning of the Japanese words ‘Kai’ and ‘Zen’, which translate roughly into ‘to break apart and investigate’ and ‘to improve upon the existing situation’ (www.kaizen- institute.com). The Kaizen Institute defines Kaizen as the Japanese term for continuous improvement. It is using common sense and is both a rigorous, scientific method using statistical quality control and an adaptive framework of organizational values and beliefs that keeps workers and management focused on zero defects. It is a philosophy of never being satisfied with what was accomplished last week or last year (Barnes, 1996).

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

results, systemic thinking, nonjudgmental and non-blaming (Mullins, 2010). The word indicates a process of continuous improvement of the standard way of work. It is a compound word involving two concepts: Kai (mean change) and Zen (mean for the better). The term also comes from ‘Gemba Kaizen’ meaning ‘continuous improvement’ (CI). Continuous Improvement is one of the core strategies for excellence in production, and is considered vital in today’s competitive environment (Robinson, 1991). It calls for endless effort for improvement involving everyone in the organization.

The ideas of kaizen philosophy implement as continuous improvement of organizational attitude and the approach on the purpose of doing business. It is the key thrust to maintaining or achieving competitive advantage through a well managed, dynamic change process. It is customer focused, ever changing, and maximized when all associates use Kaizen to achieve the primary quality, cost, delivery, safety, and morale goals. Its assumption lies in the Buddhist understanding of life to be inherently the experience of suffering. (According to this school of thought, humans undergo suffering because everything is the result of ever- changing and interrelated conditions and causes. Our confusion and suffering will come to an end, when the causes of our suffering are identified and extinguished. (Gembutsu Consulting, 2008). The Kaizen philosophy assumes that our way of life—be it our working life, our social life, or our home life—should focus on constant-improvement efforts.....In my opinion, Kaizen has contributed greatly to Japan’s competitive success (Imai, 1997).Kaizen is the main pillar of TQM (Total Quality Management) or TPM (Total Productive Maintenance), and its emphasis lies with continuous process improvement. The most effective way to achieve Kaizen is for worker themselves to be highly motivated to implement to improvement production methods and products. Suggestion systems, QC circle and self- management are typical methods to motivate workers to achieve Kaizen according to Ethiopian Kaizen Institute, (2013: 36&39).

Kaizen means “continuous improvement” involving the entire workforce from the top management to middle managers and workers. Imai (1986) argued that, it is not just a management technique but a philosophy which instructs how a person should conduct his or her life. Kaizen shows how management and workers can change their mindsets together to improve their productivity. Imai farther argues that kaizen is an umbrella concept for a large number of Japanese business practices, such as 5S, including suggestion system, Quality Control Circle (QCC), Total Quality Management (TQM), the Toyota Production System, the Just-in-Time System, and the Kamban System.

2.2. Benefit of Kaizen

To build ownership and establishing the acceptable working culture / environment because kaizen relies heavily on a culture change that encourages suggestions by operators who continuously try to incrementally improve their jobs or processes, continuous improvement in a sustainable manners; To determining capital cost projects; To involve slow but steady incremental improvements; To create participatory approach on creativity and arrange work-shop setting to minimize time wastage during producing goods; and to create zero defect production in the production line (Federal TVET Bureau ,2014).

When kaizen implemented in TVET college the main aim were not only increasing productivity, quality, trainers capacity but also in their work culture has a relationship to MEBs and to help MEBs in their shads/workshop by implementing kaizen with the members of MEBs (AA TVET, 2010).

As Luecking (2009) kaizen is a daily activity, the purpose of which goes beyond simple productivity improvement. It is also a process that, when done correctly, humanizes the workplace, eliminates overly hard work and teaches people how to perform experiments on their work using the scientific method and how to learn to spot and eliminate waste in organizational processes.

The right steps properly applied, any company, no matter what its nationality, can benefit from kaizen. Kaizen Fundamentals are: Employee empowerment, Self discipline and Recognition. Thus not only the colleges but also any other organization implement kaizen management philosophy has a benefit from its staff member work satisfaction beyond profitability of the organization. Kaizen involves every employee in making change—in most cases small, incremental changes. It focuses on identifying problems at their source, solving them at their source, and changing standards to ensure the problem stays solved. These continual small improvements add up to major benefits. They result in improved productivity, improved quality, better safety, faster delivery, lower costs, and greater customer satisfaction and so on (Imia,1997).

Since the benefits of kaizen principles come gradually and its effects are felt usually on a long-term basis, it is obvious that kaizen can succeed only under top management that has a genuine concern for the long-term health of the company (Imai, 1986). If management makes positive use of the process-oriented way of thinking to support innovation and further reinforces it with a kaizen approach, it will find that the company's overall competitiveness will be improved in the long run.

The benefits of kaizen include the participation of all collaborators in improving and transforming (evolving) the organization in small, every-day, incremental steps that do not lose effectiveness over time.

Implementing kaizen is believed to have benefits. These include: improves profit, Improves customer satisfaction, discovers hidden talents, promotes self- development, improves the motivation and morale of employees at each level, enhances communication between top bottom level, helps to build and improve team work, creates ownership and trust within each other, reducing waste, proper use of time by making proper layout of the machinery getting space and the set up of the entire enterprise premises, engages and empowers employees at all levels, and improves the overall work environment (EKI ,2013)

The documentary analysis of Wolkite Poly-Technique College also supports the success stories about the implementation of kaizen. There were benefits of kaizen implementation at the level of the College. There include: The process of finding material was found to take 10-15 minutes before arrangement, materials hidden and poor - cleaning; hidden materials were found, created conducive environment and time saved; problem of installation solved; after the installation conducive, visible and safe environment created; the warehouse was re-arranged and all materials were situated in a clear visible area; and the garbage was prepared and situated in a specified areas of the shop in the College. The content analyses of available documents substantiate the presence of successful implementation of kaizen strategy in the Wolkite Poly-Technique College , With regard to productivity increment, unlike before, workshops and machineries are organized in a structural way to ease production; the practice of leaving conducive working space was found to be suitable for proper production of materials; ventilating the workshops and made them conducive working environments; and waste storage bins were prepared to keep workshops clean(Wolkite Poly-technique annual Report,2014).

The outcomes were in terms of gaining additional width of the workshops, areas of space, reduction in expenses of implementation, improving internal workers management system and increasing incomes. Specifically, Automotive, Metal manufacturing gained in terms of shop width of 100 m², extra space of 24 m², which mean not only implementing Kaizen but also BPR applying organizational performance and effectively the College best practice for others and other College.

Electrical Electronics department gained work shop width 50 m² of extra working space which was obtained after implementation of kaizen strategy, manufacturing department generated an income which amounted ETB 6000 from selling by-products (scrap).

Garment and Textile department of the College also had the following successful outcomes: shop width became 200 m², extra- working space of 60 m², ETB 500 expenses for implementation, gained incomes of ETB 2000 from selling Waste (Wolkite Poly-technique annual Report, 2014). Therefore, all of those positive outcomes on the part of the College are examples of success stories about the implementation of kaizen strategy in the past.



Figure 2 Kaizen in Garment department, Wolkite Poly-Technique College

2.3. The Kaizen Philosophy

Improvement has become an integral part of theories and models of change, such as Structure Theory (Pettigrew, 1990), Imai (1986) introduced kaizen into the Western world when outlined its core values and principles in relation to other concepts and the practices involving the improvement process in organizations (Berger, 1997). Framed as Continuous Improvement (Robinson, 1991), the Kaizen philosophy gained recognition and importance when it was treated as an overarching concept for Total Quality Management (TQM) (Imai, 1986; Tanner and Roncarti, 1994; Elbo, 2000), Total Quality Control (TQC) or Company Wide Quality Control (CWQC) citing practices such as Toyota Production Systems (TPS) and Just in time (JIT) Response systems (Dahlgard and Dahlgard-Park, 2006) aimed at satisfying customer expectations regarding quality, cost, delivery and service (Juran, 1990). With the focus on improvement, the Kaizen philosophy reached notoriety in organizational development and change processes and has been explained as the “missing link” in Western Business Models (Sheridan, 1997).

As kaizen implies change and become good, after engage in kaizen, therefore, is expected to go beyond one’s contracted role(s) to continually identify and develop new or improved processes to achieve outcomes that contribute to better realization of organizational goals (Newitt, 1996; Farley, 1999). Kaizen can be understood as having a spirit of improvement founded on a spirit of

cooperation of the people, suggesting the importance of teams as a fundamental design in this approach and (Imai, 1997). Based on the available past literature, the researcher summarized the kaizen methodology as (1) one that involves all the employees of the firm; (2) improving the methods or processes of work; (3) improvement are small and incremental in their nature, and (4) using teams as the vehicle for achieving these incremental changes.

Kaizen philosophy, however, includes the concept of kaizen (Continuous Improvement) and Kairyo (Process Improvement). Imai (1986) further proposes that the kaizen philosophy embraces three main principles

Principle1: Kaizen is process oriented. Processes need to be improved before results can be improved.

Principle2: Improving and maintaining standards. Combining innovations with the on-going effort to maintain and improve standard performance levels is the only way to achieve permanent improvements. Here, kaizen focuses on small improvements of work standards coming from on-going efforts. There can be no improvement if there are no standards. The PDCA Cycle (Plan-Do-Check-Act) is used to support the desired behaviors. This cycle of continuous improvement has become a common method in Kaizen; it is used to generate improvement's habits in employees.

Principle3: People Orientation. Kaizen should involve everyone in the organization, from top management to workers. One of the strongest mechanisms aligning with this third principle is Group-oriented Kaizen. Kaizen teams focus primarily on improving work methods, routines and procedures usually identified by management (Imai, 1986).

2.3. 1. Pillars of Kaizen

According to Imai (1986), in kaizen management philosophies and practices, the three pillars of kaizen are summarized as follows: (1) housekeeping, (2) waste elimination and (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.

2.3.1.1.. 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 the idea of “the right

things to the right place” is the requirement of Gemba in the learning department of the colleges after finishing the training sessions.

As technology transfer and extension service manual of Addis Ababa TVET Agency in 2010 stated that, 5s is a system of steps and procedures that can be used by individuals and teams to arrange work areas in the best manner to optimize performance, comfort, safety and cleanliness.

Other writers like Foss (2004) citation, 5s is a philosophy and checklist for good housekeeping to achieve greater order, efficiency and discipline in the workplace. Thus applying 5s in the learning department are important for the trainees, trainers and the college’s community to use time, energy and material effectively. Additionally the training system will be facilitated in smooth and attractive way.

Benefits of applying 5s in any organization, to the employees advised by Imai (1997) are:-

Creates cleanliness, sanitary, pleasant, and safe working environments; it refresh work place “Gemba” and greatly improves employee morale and motivation; it eliminates various kinds of waste by minimizing the need to search for tools, making the operators' jobs easier, reducing physically exhausting work, and freeing up space; it creates a sense of belonging and love for the place of work for the employees.

It needs everyone to maintain 5S guidelines. To maintain discipline, we need to practice and repeat until it becomes a way of life. Discipline means making a steady habit of properly maintaining correct procedure. Time and effort involved in establishing proper arrangement and orderliness will be in hopeless if we do not have discipline to maintain it.

If we do not do 5S, we can’t do any other work efficiently. They are features which are common to all places and are the indicators of how well an organization is functioning. Thus kaizen involves setting standards and then continually improving those standards. To support the higher standards kaizen also involves providing the training, materials and supervision that is needed for employees to achieve the higher standards and maintain their ability to meet those standards on an on-going basis.

2.3.1. 2. Waste (Muda) Elimination

As Berk & Berk (1993) citation, Muda in Japanese means “waste”. The resources at each process, people and machines either add value or do not add value and therefore, any non-value adding activity is classified as Muda in Japan. Work is a series of value adding activities, from raw materials, ending to a final product. Muda is any non-value added task.

Wastes are one means of productivity loss mechanism. So, to increase the production quality and quantity must apply wastes reduction methods in the working area. As Cantor (1997) stated that,

the main seven types of waste in the working area especially in manufacturing plants are: - overproduction, excess inventory, waiting, transporting, defect-making, unnecessary motion, and excess processing. But for the administrative office Muda are:-Passing on work that contains errors, Signature approvals, bureaucratic, walking or routing documents, copies files, a lot of papers and excess documentation. As a result try to eliminate those wastes to increase their profits like save time, money and capitals (land, labor and human power).

2.3.1.3. Standardization

According to Kilian (1992) standards are set by management, but they must be able to change when the environment changes. Companies can achieve dramatic improvement as reviewing the standards periodically, collecting and analyzing data on defects, and encouraging teams to conduct problem-solving activities. Once the standards are in place and are being followed then if there are deviations, the workers know that there is a problem. Then employees will review the standards and either corrects the deviation or advice management on changing and improving the standard. It is a never-ending process and is better explained and presented by the PDCA cycle (plan-do-check-act), known as Demming cycle (Kilian, 1992). As shown in the diagram below:

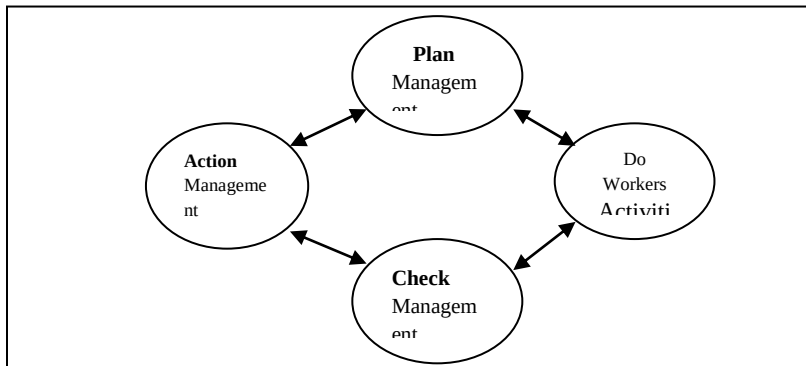


Fig.2 Demming cycle

Adopted from “the world of W .Edwards Deming”, 2nd ed (Kilian, 1992).

Plan: - refers to establishing a target for improvement (since kaizen is a way of life, there always should be a target for improvement in any area) and devising action plans to achieve that target. Do: - refers to implementing the plan. Check: - refers to determining whether the implementation remains on track and has brought about the planned improvement. Act: - refers to performing and standardizing the new procedures to prevent recurrence of the original problem or to set goals for the new improvements. As Imai (1986) state that the PDCA cycle revolves continuously; no sooner is an improvement made than the resulting status quo becomes the target for further improvement. PDCA means never being satisfied with the status quo. Because

employees prefer the status quo and frequently do not have initiative to improve conditions, management must initiate PDCA by establishing continuously challenging goals.

Reviewing the above processes and working on a successful PDCA cycle then is followed by the SDCA cycle where 'S' stands for standardization and maintenance of the new situation Imai (1986). So, PDCA stands for improvement and SDCA stands for standardization/maintenance.

The two cycles are combined and presented on the following:

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

Thus, Demming cycle indicate that never ending in the process of improvement but always in the process of searching defect to reach in the new and latest idea i.e., innovation. Then after innovation always kaizen is followed because additional improvement leads to the latest one.

2.3.2. Kaizen Application and Implementation

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

A Western philosophy may be summarized as; they say goes if it isn't broken, don't fix it." The Kaizen philosophy is to "do it better, make it better, and improve it even if it isn't broken, because if we don't, we can't compete with those who do." Kaizen in Japan is a system of improvement that includes both home and business life. Kaizen even includes social activities. It is a concept that is applied in every aspect of a person's life. In business Kaizen encompasses many of the components of Japanese businesses that have been seen as a part of their success.

Quality circles, automation, suggestion systems, Just-In-Time delivery, Kanban and 5S are all included within the kaizen system of running a business. Kaizen involves setting standards and then continually improving those standards. To support the higher standards kaizen also involves providing the training, materials and supervision that is needed for employees to achieve the higher standards and maintain their ability to meet those standards on an on-going basis. Kaizen is focused on making small improvements on a continuous basis (Imai, 1997).

Many scholars in the field believe that there are certain minimal conditions which have to be met for successful implementation of kaizen. This includes conducive political framework, harmonious social relations, compassionate and sympathetic attitude, and capacity to take individual, as well as collective responsibility, and ability to work collectively or high social capital (Ohno, I., Ohno, K., Uesu, S., Ishiwata, A., Hosono, A., Kikuchi, T., 2009)

Implementation of kaizen in higher institution needs to be fully committed to boosting the morale of their workers to develop members' capabilities, to achieve self actualization, and to work cooperatively. These commitments are vital to the process for improving the quality of the training output. Additionally, Asayehgn (2011) stated that in the journal of "the Transferability of the Japanese Kaizen Management Techniques" the transferability of the ideas of kaizen management techniques without contextual understanding of our organization is very difficult, especially in educational institutions because human being doesn't have a spare part which is processed again.

There are several types of kaizen activities, ranging from those that focus on developing solutions to problems on the factory floor, to implementing a predetermined plan for change, to reorganization the flow of paperwork. The most familiar and common type, the factory kaizen, provides a good example of the technique (Imran , 2011).

In order to solve problems found in any organization, today's managers often try to apply sophisticated tools and technologies to deal with problems that can be solved with a commonsense, low-cost approach. They need to unlearn the habit of trying ever-more sophisticated technologies to solve everyday problems.

As Imai (1986), there are two approaches to problems solving:

The first involves innovation – applying the latest high-cost technology, such as state-of-the art computers and other tools, and investing a great deal of money. The second uses commonsense tools, checklists, and techniques that do not cost much money. This approach is called kaizen.

This article will show how kaizen can achieve significant improvement as an essential building block that prepares the company for truly rewarding accomplishments. Hence applying kaizen is just like looking the work environment to solve the problem of the organization with no or little large capital investment. As DeVaus (2002) citation states that “to understand is hard. Once one understands, action is easy” so to implement kaizen management philosophy in practical the understanding of the theoretical concept is the ground base to the application.

According to GRIPS forum (2009) citation, African manufacturers are not only disadvantaged by the technological gap but also by the lack of knowledge in key managerial methodologies like kaizen. Since kaizen tools are developed in a way to be appreciated by all the workers, and its fundamental methodology is not very complicated. Kaizen is more to do with a philosophy and daily practices rather than techniques. For example, 5S can be taught even to the colleges trainees since the philosophy is sort, set in order, shine, standardize and sustain. thus, the trainees develop their 5s/housekeeping application as a daily activities in the workshop next they will be an owner of the manufacturers and an employees of the manufacturing plants so that the lack of knowledge gap of kaizen concept understanding in the manufacturing plant may be eliminate through time to time by developing trainees knowledge.

Thus everybody needs improvement so applying the concept of kaizen in day to day activity you can change yourself from rigidity ways of approaches to flexibility. As indicated in the manual of kaizen implementation in AATVET Agency, despite flexibility in its application, kaizen has, among others, common characteristics. It is:

- (a) not imposed by “top-down” orders or instructions, but is a “bottom-up process” implemented at the initiative of each worker, based on their observations, experiences, knowledge, and so on; (b) not a one-shot activity, but is continuous and incremental; (c) not strictly limited to production itself, but covers all aspects of production including improvements in safety and morale, as well as improvement in quality, in operation efficiency and in delivery of kaizen application in the colleges duration.

2.3.3. The Relationships between Kaizen Implementation and Reward and Recognition

By making kaizen as standardize ways of life in the organization always considering the worker because they are an actor to implement it and continuing the sustainability of the system. Thus rewarding and recognizing the employees for their accomplishing task is essential.

Organizational culture has several essential components i.e. organizational values, leadership, and the reward and recognition structure of the organization (Knouse, 1996).The reward system

reflects the organizational philosophy, democratic and innovative or autocratic and bureaucratic. Promotion and rewards reinforces employee commitment to organizational values and to the organizational culture. Reward and recognition have various functions and can be valuable tool at organizations on their road for total quality management.

According to TVET Agency manual of Industry and Technology Transfer (2010), indication recognition is also a form of feedback about the result of individual or team efforts. It shows the individuals or the teams that they are on the right track toward continuous improvement. Recognition as feedback can come from supervisors, other teams, internal customers in the organization, or external customers in the marketplace, Kaizen philosophy processes demand empowered employees, team players and cross functional activities.

Reward and recognition can motivate those individuals and groups to continue their active participation in the organization. It will also create a positive environment for various teams to compete against each other and these give a 'win-win' situation between the organization and employees (Yukl, 2010).

Generally R&R(Reward and Recognition) has a positive relation between quality production and employees satisfaction in the organization if it do so properly. To do this activity must be aware of each employee during the preparation of organizational R&R planning system hence they are an implementers. If it is done in an improper way, then R&R may create mistrust between the employees and the organizational leadership and management. This also has its own effect both to the employees and the organization vice-versa. Inconstant to that reward and recognition stimulates additional effort in employees if done consciously.

2.3.4 Roles of Management and Employees in Implementing Kaizen

When we see bureaucratic application of the management system it has perceptual difference between Western nations and Japan regarding job function. These includes :(1). Western Approach: Importance to systems and procedures are, through systems in that organizational level and functions are established. Here, the focus is on control i.e. functioning within chance cause variation level. In order to take action when assign causes creep in the context.

Changes are mainly through innovations. They are top and middle management responsibilities. This leads to the existence of two types of organizations. (A). Status-quo organization has attempt to improvement or innovation till market condition forces ;(B). Innovation centered organization: is high technology industry. Eventually it disappeared after sometime (Imai, 1986). (2). Japanese Approach focuses on technological and process innovation fall largely in the domain of top and middle management, but improvements are an all pervasive activity from top

to bottom with varying degrees according to (Imai,1986) .Management has two major functions in kaizen (i) Create a conducive environment and encourages continuous improvement (technological, managerial and operative) and establishes standards; (ii) maintaining the standards established; as we go from the bottom, the improvement function increases and the top and middle management have a greater role in it. Similarly, as we come down from the top, the supervisors and workers have a greater role in maintenance function. The important role for management in maintenance function is to establish the standards, policies and procedures so that they can be followed by everybody and they could be monitored and reviewed. Management also has the responsibility to educate and train the people to enable them to follow the standards. Thus, in the Japanese perception, one action follows the other in succession (Imai 1986).

.Top Management: They work as a establish kaizen as a corporate policy, and (a) to work out strategies for implementation of kaizen management philosophy in the MSEs; (b) to allocate resources, extend, support guidance and provide according to the came author (c) establish clear policies on kaizen and provide cross functional management goals for achieving kaizen; (d) Evolve systems and procedures and organizational structures for promotion of kaizen (Imai, 1986).

Middle Management: (a) Deploying and implementing Kaizen goals directed by top management. Use kaizen in cross functional management activities; (b) Improving (kaizen) in functional capacity; (c.) Maintaining and upgrading existing standards through improvements; (d.) Providing assistance to workers to develop skills and acquire knowledge on problem solving tools.

Supervisors: (a.) Follow Kaizen in the functional role (b.) Sustain high morale of workers; keep continuous communication links; assist in kaizen. (c.) Involve in and support SGA like QC circles and also suggestion system. (d.) Provide assistance and involve workers in kaizen activities (Imai, 1986).

Workers (a) Through small group activities and suggestion system involve in kaizen (b). Be disciplined to follow standards. Think of kaizen in day to day activities. (c.) Concentrate on self-development continuously and increase capabilities for problem solving.

2.3.5. The System, Technique and Implementation of Kaizen Family

Indeed an integral part of Total Quality Management (TQM) is Kaizen therefore the term is reciprocally related. When an organization/company want to maintain a level of quality that satisfy their customers at the appropriate time and price then that organization must follow some quality management techniques to fulfill those principles and planning. According to Imai (1986)

the techniques associated with Kaizen included are, total quality control (TQC)/TQM, just in time (JIT), total productivity maintenance (TPM), five's' (5s), Benchmarking, skill gap analysis, six sigma the information about it found under TQM, Policy Deployment, a Suggestion System, Small-group activity, etc. For this research only use some of them than all organizational performance and effectiveness.

Under Organizational performance and effectiveness also it has, TQM/Kaizen, Six Sigma and BPR are the meager ones according to (Mullins, 2010). These are generally expressed in terms of a way of life for an organization as a whole, committed in total customer satisfaction through continues process of improvement or an application of radical change, and the contribution and involvement of people. This topic also emphasize on explanation about the features of TQM and kaizen in detail.

2.3.5.1 Total Quality Management (TQM)

One particular approach to improved organizational performance and effectiveness is the concept of the Japanese inspired total quality management (TQM). There are numerous definitions about TQM. These are generally expressed in terms of a way of life for an organization as a whole, committed to total customer satisfaction through a continuous process of improvement and the contribution and involvement of people according to (Mullines,2010) .

A major influence on the establishment and development of TQM was the work of Deming, who emphasized the importance of visionary leadership and the responsibility of top management for initiating change. A mathematician by training, he was interested in statistical measurement of industrial processes and attempted to persuade the American manufacturing industry to improve quality, and to create constancy of purpose for improvement of products and service. Deming cited in, (Ibid), drew attention to the importance of pride in work and process control, and made constant reference to the importance of 'good management' including the human side of quality improvement and how employees should be treated.

The successful organization should perform effectively with organizational matter on policy issues it is constantly seeking opportunities to improve the quality of its products and/or services and processes. The organization must also couple quality with a required level of productivity. The chartered management institute gives the following definition: (Ibid: 782.)

TQM is a way of managing which gives everyone in the organization responsibility for delivering quality to the final customer; quality being described as 'fitness for purpose' or as 'delighting the customer'. TQM views each task in the organization as fundamentally a process which is in a customer/supplier relationship with the next process. The aim at

each stage is to define and meet the customer's requirements with the aim of maximizing the satisfaction of the final consumer at the lowest possible cost.

2.3.5.2 Implementation of TQM and Kaizen

If TQM is to be implemented successfully it must be seen as a total process involving all operations of the organization and the active participation including top management. It demands a supportive organizational culture and a programme of management change. TQM places emphasis on the involvement of people as the key to improved quality. It involves changes to the traditional structure with greater emphasis on natural work groups, multi-discipline working and team-based management. Attention must be given to effective education and training, empowerment and the motivation to take ownership of quality, and systems of communications at all levels of the organization. A related strategy to achieve a long-term aim, hence, management authors' and researchers agreed that the successor of TQM is the balanced scorecard. According to Drummond cited in, Ibid, puts forward an interesting debate on comparing the philosophies and ideas of Deming with Taylor's Scientific Management, and questions whether Deming's ideas are as radical as they seem. Drummond suggests: cited in (Mullins, 2010)

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

2.3.5.3. The Just- In-Time Production System

Originating at Toyota Motor Company under the leadership of (Taiichi Ohno, 1988) the just-in-time (JIT) production system aims at eliminating non value-adding activities of all kinds and achieves a lean production system that is flexible enough to accommodate fluctuations in customer orders. Just-in-time principles are to produce only the units in the right quantities, at the right time, and with the right resources, Applicable. "This production system is supported by such concepts as take time (the time it takes to produce one unit) versus cycle time, one - piece flow, pull production, jidoka("automation"), U-shaped cells, and setup reduction" according to(Imai, 1986:9). To realize the ideal JIT production system, a series of kaizen

activities must be carried out continuously to eliminate non-value- adding work in Gemba. JIT dramatically reduces cost, delivers the product in time, and greatly enhances company profits.

2.3.5.4. The 5s Formwork Place Organization

For proper housekeeping a valuable tool or methodology is used. The term “Five S” is derived from the first letters of Japanese words referred to five practices leading to a clean and manageable work area: seiri, seiton ,seiso ,seiketsu and shitsuke . The English words equivalents of the 5S’s are sorting, Set in order, Shine, Standardization and sustain (Imai, 1986).

Imai (1986) advised that 5S implementation means applying the following activities in the workshop: Sorting, Set in order, Shine, Standardization and sustain.

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.

Sustain: - Sustaining is the end result of how well we have performed the previous four S's. In the Sustainment stage, think of ways to eliminate effort in maintaining an area. It is by far the most difficult where you need to make it habit to properly maintain the new processes.

2.3.5. 5. Policy Deployment

Although kaizen strategy aims at making improvements, its impact may be limited if everybody is engaged in kaizen for kaizen sake without any aim. Management should establish clear targets to guide everyone and make certain to provide leadership for all kaizen activities directed toward achieving the targets. Real kaizen strategy at work requires closely supervised implementation. This process is called Policy Deployment, or in Japanese, Hoshin Kanri cited in (Imai, 1986).

First, top management must devise a long term strategy, broken down into medium- term and annual strategies. Top management must have a plan-to- deploy strategy, passing it down through subsequent levels of management until it reaches the organization. As the strategy cascades down to the lower echelons, the plan should include increasingly specific action plans and activities. According to (Imai, 1986), farther explain a policy statement along the lines of “We must reduce our cost by 10 percent to stay competitive” may be translated on the shop floor to such activities as increasing productivity, reducing inventory and rejects, and improving line configurations. Major Kaizen systems without a target would resemble a trip without a destination. Kaizen is most effective when everybody works to achieve a target, and management should set that target (Imai, 1986).

2.3.5. 6. The Suggestion System

Functions as an integral part of individual-oriented kaizen and emphasizes the morale- boosting benefits of positive employee participation. Japanese managers see its primary role as that of sparking employee interest in kaizen by encouraging them to provide many suggestions, no matter how small. Japanese employees are often encouraged to discuss their suggestions verbally with supervisors and put them into action right away, even before submitting suggestion forms. They do not expect to reap great economic benefits from each suggestion. Developing kaizen - minded and self-disciplined employees is the primary goal. This outlook contrasts sharply with that of Western management’s emphasis on the economic benefits and financial incentives of suggestion systems (Ibid).

2.3.5.7. Small-Group Activities

A kaizen strategy includes small-group activities—informal, voluntary, intra-company 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 QC. Successful quality-circle activities indicate that management plays an invisible but vital role in supporting such activities (Ibid).

2.3.5.8. Kaizen Method

Kaizen methods for work process improvement that include making the improvements originated in the World War II Job Methods training program. It was developed by the Training within Industry (TWI) organization, a component of the U.S. War Manpower Commission during World War II. Kaizen methods that suggest improvements also originated in the work TWI. As suggestion rather than action improvement programs, Imai points out that, "Less well known is the fact that the suggestion system was brought to Japan...by Training within Industry (TWI) (Imai, 1986:112).

Huntzinger, (2002) also traces Kaizen back to the Training within Industry (TWI) program. TWI was established to maximize industrial productivity from 1940 through 1945. One of the improvement tools it developed, tested, and disseminated was labeled. It taught supervisors the skill of improving work processes. This program's name was changed to "How to Improve Job Methods" (Production Board, 1945:191) and is most often referred to as Job Methods training. It taught supervisors how to uncover opportunities for improving work processes and implement improvements. It incorporated a job aid that reminded the person of the improvement process.

2.3.6. Preconditions Necessary to Implement Kaizen Training

The most effective forms of development activity are those connected directly to managers' experiences in the workplace. The belief that 'leaders are born and not made' has finally been eclipsed by the implementation of job experience. The ability to facilitate organizational learning and to lead through ethical/ value-based behaviour is identified as priority areas. Continuing professional development (CPD), management development should be seen as continues us process including the preparation and responsibility of a new job, and subsequent career progression. In recent years greater recognition has been to the significance of lifelong learning and to continuing professional development (CPD). Regarding CPD as vital to a successful career and requires all members to make a commitment to their own professional development. CPD is liked to gaining the status of chartered manager according to (Mullins, 2010).

Therefore, human capital development are the very important things to evolved and create skilled individual live without job to become long last employment. The conception of human capital development underlies most vocational education and training programmes and it consists of at least four different stages or outcomes which are causal and sequential so that if any one of them is missing, the subsequent stages are aborted. The last stage is creating long-run employment and non-employment outcomes. How can achieve the last stage suggested in the above? By achieving the last stage we can assure social welfare peaceful living for the people or we can

reduce criminals due to employment. The organization should confirm lifelong learning and try to identify the human resource skill and knowledge gap to fix and fit into dynamic economy and world of work.

There is a wide range of interrelated individual, group, organizational and environmental influences on behaviour in work organizations. If possible it is better to use developed nation mostly used Excellency model in under professional development. Accordingly there are many different criteria that might be applied in attempting to assess performance and effectiveness. Popular management techniques include benchmarking and gap analysis we are using. Growing attention has been given to measures of performance in the public sector but there is a potential difficulty in measurement of a service ethic. The overall effectiveness of the organization is affected both by sound structural design and by the individual filling the various positions within the structure (Mullince, 2010).

2.3.6. 1.Benchmarking

Businesses in both public and private sectors seek to continuously improve the effectiveness and efficiency of their products and services. In this regard, a number of changes have passed through the practices of most organizations recently, especially concerning the management accounting aspects. Business units are reviewing their costs, structures and the efficiency of their functions. In response, the managers have undertaken a review and benchmarking of their organizations' costs and the efficiency of business units despite having developing strategies to control other operating costs. As such, benchmarking has reached widespread diffusion and is now considered as one of the most powerful tools for promoting process improvements and re-engineering in many prominent organizations. Benchmarking is a popular method for developing requirements and setting goals....The benchmarking is becoming more commonly used and it is a more efficient way to make improvements. Managers can eliminate trial and error process improvements....according to department of trade and industry American Productivity and Quality Centre (APQC) (Edti UK www.dti.gov.uk/quality/benchmarking).

Whichever type is conducted, there are four main steps, Quality to Excellency department of trade and industry (Edti UK www.dti.gov.uk/quality/benchmarking), and the steps can include:-
Step 1–Plan the study: Establish benchmarking roles and responsibilities, identify the process to benchmark, Document the current process, and define the measures for data collection
Step 2–Collect the data, Record current performance levels, Find benchmarking partners, Conduct the primary investigation, Make a site visit.

Step 3—Analyses the data, Normalize the performance data, Construct a comparison matrix to compare your current performance data with your partners' data, Identify outstanding practices, and Isolate process enablers.

Step 4—Adapt enablers to implement improvements, Set stretching targets, “Vision” an alternative process, consider the barriers to change, Plan to implement the changes.

2.3.6. 2.Gap Analysis

Gap analysis involves an investigation of the gap between the vision, objectives and goals of the organization and actual levels of performance, and establishing the actions necessary to bring activities in line with that which is planned. For instant the larger quantity of non-financial measures that most companies track, and the extent to which such measures are aligned with the company's strategies and value drivers. One method for assessing this alignment is gap analysis' which requires managers to rank performance on at leasing two dimensions: their importance to strategic objectives and the importance to strategic objectives and the importance currently placed upon them. The importance of a collective understanding and vision of what the organization is capable of achieving, expressed as short-term goals and long-term vision; and to creating superior performance through inspired and committed people. The extent of the gap is the basis for a shared understanding of the gap between current capability and the desired state, the extent of the gap is the basis for a shared understanding of what needs to be achieved, and potentially the energy for the journey (Mullines, 2010).

2.4. Kaizen/TQM versus BPR

An integral part of a total quality approach is the Japanese concept of Kaizen, Business process Re- Engineering (BPR) and Total Quality Management (TQM) both are organizational performances and effectiveness it has also a debate between the two. Some commentators appear to suggest that TQM has been taken over by BPR although others argue that it can be seen as complementary to and/or a forerunner for BPR (Mullins, 2010).

Table 1: Kaizen versus BPR

FEATURE	KAIZEN/TQM	BPR
Management, culture and innovation the Applicability globally	It's Focused on demands timeliness (JIT) Kaizen are consistent to innovation all workers, skill, motivation, and Kaizen is applicable across different Cultural settings. This is so because the most important defining factors for Kaizen are workers' skills, motivation, and top management commitment .Kaizen helps enterprise become several times as competitive as they are now.	BPR is focused on expensive technology or Innovation hence has almost nothing to do with cultural differences. The management system of applying innovation is concerned only on top management than workers
Appropriate development And learning environment	Suitable for developing countries whose MSEs perform along traditional lines and works well for slow-growth it is costly match. It support lifelong learning adaptability flexibility the organizational response also paradigm shift. Focused on lifelong employment	BPR is better suited for developed nation, fast changing. Economies that can invest in new technologies and innovations. Since it is time bounded no longer emphasis for learning but it assign the worker after full implementation Right person at the right place.
Pace of change	Incremental gain may often take a number of years to complete. Focused on minor, slows and incremental improvement	Re-engineering as opposed and no-room for incremental change. It is abrupt once and for all large step. Radical design of business process to achieve breakthrough results.
measurement and Stability	It is easy to assess the overall success or failure of the enterprise. Changes are Highly stable, predictable and keep going over time sustain the business	Difficult to measure and the overall success of the enterprise Changes are spontaneous and less predictable, failed change program
Investment orientation	Kaizen directly works on workers and managers and makes them several times as competent as they are now	BPR focuses customer satisfaction alone such as cost, quality, service and speed.
Bureaucratic system business system	It is fully decentralized (bottom up) management system non-judgmental, non-blaming ,both friendly for customers and employees ,supports Collectivism business environment like Toyota car	Centralized It is exposed to Downsize and stand for restructuring layoffs happens during implementation it is exposed to personal attack and revenge, it is the supports individualism business environment like Hammer car
Cost	Without or less costly i.e. with current resources Kaizen can be implemented even start with zero initial	Fundamental rethinking and radical design of business process to achieve dramatic improvements. Requires huge investment Outlays.
Everyday application	It focused on prevention not cure. Kaizen is practiced every time. This continuous application nature of Kaizen helps solve whenever flaws arise in the process.	It focused on cure not prevention. BPR can't be used on every day basis. Hence, it Can't be used whenever flaws are detected in the process.

Source: (Behare Assefa, 2010)

Indeed, all organizational performance and effectiveness have its own strength and weakness but the researcher paying attention on KAIZEN/TQM. Certainly the originators of TQM did it in the Japan with Deming but properly applied in their almost entire Japanese industry. It can be concluding that the main differences between Kaizen and BPR as follows. MacDonald and Dale (1999) indicated firstly, large step changes (BPR) are riskier, more complex and more expensive than continuous improvement (Kaizen). This implies that Kaizen may be preferable for developing countries for certainty, cost and simplicity reasons. Secondly, BPR places more emphasis on equipment and technology rather than people; Kaizen is the opposite. Given that developing countries are relatively technology scarce and labour abundant though workers in developing countries may not be highly skilled, their comparative advantage appears to lie in implementing Kaizen. Thirdly, re-engineering tends to concentrate on one process at a time using a project planning methodology, whereas Kaizen takes a more holistic view of the organization, building improvement in to all aspects of business operation.

As observed in the above table Kaizen may preferable for developing countries for certainty, cost and simplicity reasons. BPR places more emphasis on equipment and technology rather than people; Kaizen is the opposite one.

2.5. Kaizen Experience of Africa

Kaizen has become a global activity spread by multinational companies and their employees. It has become popular not only in the manufacturing sector but also in the service sector. However, proliferation of kaizen in Africa is still very small due to the limited number of players and the philosophy the Government who bring in the practice. Due to this situation the responsible Government body received the best practice of the Japans KAIZEN in their premises (GRIPS Development Forum, 2009).

For the effectiveness of the Kaizen they commence it as institute. Kaizen Institute is an international private consultant group that specializes in the kaizen method. It has licensed networks throughout 24 countries from which consultants provide services globally. In Africa, its subsidiary institute opened in several African countries including Ethiopia. Their performance has proved that the kaizen method is much needed and commercially viable. There are also other unlicensed consultancies firms, which can provide training on kaizen. When we observe in the Japanese context all of KAIZEN consultants are private company. Yet, these private services are still the domain of medium and large-scale companies, and their services are not affordable for most micro and small enterprises in Africa according to (Ibid.)

Kaizen activities are often found project titles such as “productivity improvement.” In Africa, are on-going be efficacies from the kaizen projects assisted by JICA (Ohno, I., Ohno, K., Uesu, S., Ishiwata, A., Hosono, A., Kikuchi, T, 2009).

2.5.1. Kaizen Policy and Strategy in the African Context

Application of kaizen activities to African manufacturers are not only disadvantaged by the technological gap but also by the lack of knowledge in key managerial methodologies like kaizen. Kaizen is more to do with a philosophy, discipline by positive changing of the manager the and daily practices rather than techniques. For example, 5S can be taught not only in the TVET but also in the primary school students since the philosophy is Sort, Straighten, Shine, Systematize, and Standardize. The beauty of kaizen is that it can realize productivity improvements with little additional investments. Simplicity and cost effectiveness are the major reasons why kaizen is well appreciated globally (Ohno, I., Ohno, K., Uesu, S., Ishiwata, A., Hosono, A., Kikuchi, T., 2009).

2.5.1.1. Kaizen Experience in Kenya

The manufacturing sector in Sub-Saharan Africa is generally not dominant compared to the agriculture and service sectors. Kenya is no exception. In 2007, the contribution to GDP of the manufacturing sector in Kenya was 11.8%, whereas the agriculture and the service sectors accounted for 22.7% and 58.2%, respectively. Source (Kenya at a glance) <http://devdata.worldbank.org/AAG/ken_aag.pdf> accessed on 1 May 2009.) Manufacturing activities in Kenya vary widely, since the country was a popular investment destination in the 1970s and 80s within East Africa.

There are some leading multinational companies operating in Kenya which are bringing in kaizen methods including Toyota East Africa Ltd. and GlaxoSmithKline Kenya Ltd. Furthermore, the Kenya Association of Manufacturers (KAM), which has approximately 600 members, has been actively involved in organizing seminars and training to upgrade the capacity of its members. KAM has partnered with the Kaizen Institute in Mauritius since 2005 and has been inviting experts for seminars and consultations. (Mabati Rolling Mills Ltd., Bidco Oil Refineries Ltd., Synresins Ltd., and Tetra Pak Ltd. are the main players promoting kaizen activities among KAM members.) These costs are now partly covered by the African Management Services Company whose original sponsor is the International Finance Corporation (IFC). KAM and the Kaizen Institute set up an annual award on kaizen in 2008. (KMA Homepage: Industries compete for kaizen Award, Newsletters of 20 July 2008. <<http://www/kam.co.ke/?=17&newsl-d=98>> accessed on 1 May 2009.) Since the demand

for training on kaizen is growing, the Kaizen Institute is offering regular training courses of its own in Nairobi. Because of publicity gained through newspaper articles presented by KAM, kaizen is relatively well recognized in Kenya, and now there are some local private consultants who can provide kaizen services (GRIPS Development Forum, 2009).

As for public initiatives, the Productivity Centre of Kenya (PCK), which has been receiving assistance from APO and JPC since 2006, has organized seminars and provided consultations to 3 model manufactures, in addition to 4 governmental and service institutions. PCK, currently under the Ministry of Labour, has only 5 personnel. Its activities have received good attention from the Government, and there is a plan to legally expand the mandate and capacities of PCK during the 2009/10 Fiscal Year (GRIPS Development Forum, 2009).

In spite of the presence of some kaizen activities in Kenya, there are some challenges. Firstly, the beneficiaries of KAM's kaizen activities are so far limited to relatively well-established enterprises, and the majority of manufactures are still not aware of the actual methodology. Secondly, the mandate of PCK does not focus on the manufacturing sector. Therefore, the spread of kaizen activities to manufacturers through the channel of PCK may be slow. Yet, the Ministry of Industrialization as well as its agencies, which are the key public institutions for the manufacturing sector, are yet to be conversant with the kaizen methodology and cannot guide local manufacturers (GRIPS Development Forum, 2009).

2.5.1.2. Tanzania Experience of Kaizen

In Tanzania, the application of KAIZEN approach is still at its newest stage. It is applied in a few hospitals and very few Small Scale Manufacturing Enterprises (SSMEs). Being a newly introduced concept in Tanzania, little is known about its applicability outside the "traditional" domain of manufacturing, particularly in the public service sector. Trained staff on KAIZEN in the accounts section carried out KAIZEN process aiming at improving revenue collection from service users for provision of better hospital management and services at Mbeya Referral Hospital (Samky, Kiwelu, Ishijima & Dibogo, 2012). Initially, the Management of Mbeya Referral Hospital was facing various problems such as delay of payments e.g. leaves and medical refunds. After 6 months of KAIZEN implementation, the number of ineffective management of National Health Insurance Fund forms was reduced by 50%.

The kaizen implementation at Kilema hospital in October 2011 and the immediate quality improvement outcome and impact was observed six months later at 4 areas practicing 5S:

Maternity ward, Pharmacy, Operating Theatre and Laboratory (Mmbando, 2012). Internal evaluation was done by hospital Quality Improvement Team (QIT), and an external evaluation was conducted by staff from the Ministry of Health and PharmAccess. The following observations were made: (1) Hospital environment was found to be very clean compared to the era before the practice of 5S, (2) waiting time at registration and OPD was reduced from 20 minutes to 5 minutes, (3) reduction of patient complaints from 80% to 20%, (4) staff enjoyed working at well-organized areas, (5) easy to see, to take and return of most items at the areas practicing 5S, (6) people were attracted to come to the hospital for support, study tour, and research and (7) staff was highly motivated to work compared to the time before implementation of 5S. Key Success Factors for KAIZEN Implementation in Review of Empirical Evidence (75% reduction). On the other hand, Total Quality Management (TQM) approach through Continuous Quality Improvement (CQI) and 5S concept were applied at Kigoma Regional hospital. The findings revealed an increasing improvement on health services delivery by reduction of cross-infection through proper decontamination and minimized workload among staffs, minimized waiting time to Outpatient Department (OPD) patients due to improved patient flow system (Shija, 2012).

2.5.1.3. Ethiopian Experience of Kaizen

The Government of Ethiopia implemented Organizational performance and effectiveness before implementing Kaizen called BPR, shortly after the introduction of a nationwide Business Process Re-engineering (BPR). According to Debela (2009), since 1994, the government of Ethiopia has embarked on reforming its civil service organizations with the objective of improving the public sector service delivery system. It was applied in Government bureaus, an idea introduced to bring radical changes among state institutions but, in the process, virtually stalled them for months and now widely deemed to be a failure. The Ethiopian government started advocating the idea of kaizen—a Japanese management philosophy—among private and state owned companies; the idea was first brought to the attention of Ethiopia's late PM Meles Zenawi in 2008 (Negussie, 2009).

In this instant the government of Ethiopia inspired by the practicality of the Kaizen policy and strategy adopt the exemplary approach. In 2008, the Government of Ethiopia as a result requested the Japanese Government to help Ethiopia established the Japanese management technique, known as kaizen. Before Industry and Trade (MOIT) reviewed about 63 companies in 2009 that were located within 100-kms of Addis Ababa to ascertain their quality and productivity status from October 2009 to June 2011. After a preliminary diagnosis of the 63 companies only

30 companies (i.e., 10 from Metal; 6 from Agro processing; 6 from Chemicals; 4 from Leather and; 4 from Textiles) were chosen to serve as pilot projects. Pilot companies from this, ten, five and three companies have been awarded good, best and excellent status respectively by Ethiopian kaizen unit (EKI report document, 2012).

The criteria for selecting of those companies are (a) had proximity or outskirts of the city of Addis Ababa (i.e., they were within 100km distance), (b) contributed towards export and /or import, (c) achieved scale of capital, and (d) had qualified employees. After observing the successes of the above implementation 2011, the Ethiopian Kaizen Institute, was established as a full-fledged consulting unit to provide ideas, support and assist in the development and enhancement of the quality and productivity framework for the entire country, (Ethiopian Ministry of Trade, 2011).

The institute claimed that the outcome of the work in the enterprises was, value was added by the firms and workers, and the profit margin of the pilot firms who went through the kaizen process increased by 176 percent, 105 percent, and 210 percent respectively, mainly due to labour productivity. The effect of material inputs, machinery, and energy was insignificant as cited (Asayehgn, 2013). These indicate that after implementation of kaizen the process includes centre of competency takes place and accreditation expected from the implementers.

2.5.1.3. Needs of Kaizen in Ethiopia

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 (2013).

The contribution of the manufacturing sector to Gross Domestic Product (GDP) is even smaller in Ethiopia. Hence, the country GDP shows that in 2006/2007 just 5.1% in comparison to 46.3% from the agricultural sector and 40.3% from the service sector respectively. Compared to Kenya, the presence of multinational companies is very small in Ethiopia. At the same time however, some talented local entrepreneurs have enjoyed the benefits of access to a market consisting of nearly 80 million people. Due to the absence of major multinational companies, Ethiopia is yet to absorb the knowledge of kaizen (Ishiwata, 2009). One characteristic of the Ethiopian manufacturing industry is the dominance of public enterprises. 44% of value addition from the manufacturing sector was produced by 154 public enterprises in 2006/7. The Government of Ethiopia is committed to modernization and productivity improvement in its public enterprises.

The Privatization and Public Enterprise Supervising Agency (PPESA), a section under the Ministry of Trade and Industry, is responsible for implementing Business Process Reengineering (BPR) among public manufacturers (Ibid).

The private sector in Ethiopia is also aware of the need for productivity and quality improvements, and the leading manufacture share adopted TQM. Yet, they have not established a visual monitoring system, which enables real-time production and quality control. Furthermore, adoption of 5S is hardly observable. Introduction of kaizen shall strengthen TQM already initiated in those manufacturers.

2.5.1.4. Stakeholders Participation in Implementing Kaizen Strategy

According to EKI, (2013) stakeholders which implement Kaizen in our country working together with the governmental organization Ethiopian Kaizen Institute (EKI), Japan International Cooperation Agency (JICA) in addition to this it includes, Ministry of Industry (MoI), Ministry of Urban Development and Construction (MoUDC), Ministry of Education (MoE), Federal Micro and Small Enterprise Development Agency (FeMSEDA), Regional Micro and Small Enterprise Development Agencies (ReMSEDA), Federal TVET Agency (FeTA), Regional TVET Agencies (ReTAs), Technical TVET Agencies (ReTAs), Technical Vocational Education and Training Institute (TVETI). Therefore, Kaizen implementation surrounded by the above stakeholders one way or another they are responsible and they have power over policy making, implementation of kaizen, supervision, observed the sustainability the implementation.

All stakeholders hold a support policy plan for SMEs, with the intention of achieving their targets. Accordingly, the stakeholders taking parts in the proper implementation of government policy here in our country are more responsible for providing TVET since they have entire professional personnel (Kaizen trainers), that can support SMEs. They are also available and closer to identify their skill gap for the purpose of fill their gap by trained according to market and industry demand.

From the above general policy, programme and strategy currently, more emphasis are put in improving their competitiveness in private and Government organization. Due to this fact, Ethiopia is proclaiming the Japanese kaizen policy. Number of other public and private enterprises try to implement kaizen training policy (meaning change for better or continuous improvement involving everyone in the micro and small enterprise) the benefits of which goes to both the client and for SMEs.

2.6. Continuous and Process Improvement Sustainability Literature

There is limited research on Kaizen event sustainability; this section reviews publications that discuss sustainability with respect to different process and continuous improvement methods.

To address the sustainability of continuous improvement, Kaye and Anderson (1999) reviewed relevant literature and conducted semi-structured interviews. Their research resulted in a model that highlights the ten essential criteria of continuous improvement. Upton (1996) claimed that sustainability, continuous improvement over time, depends upon the underlying view of how improvement is achieved implicit in the actions of both managers and operators. Upton's continuous improvement initiatives model focuses on accelerating performance improvement, maintaining consistent long-term objectives, and choosing periodic projects based on organizational ability. These focus areas appear to provide direct improvement in the chosen direction and provide a platform for future gains. More recently, Readman and Bessant (2007) assessed the results of the United Kingdom's (UK) Continuous Improvement Survey that was administered to 1000 UK firms. A part of the survey inquired about enabling improvement activities that served to encourage or reinforce the continuous improvement behaviors and routines.. Anand (2009) identified infrastructure decision areas that are important for continuous improvement initiatives through the creation of a framework of continuous improvement as a dynamic capability when it includes a comprehensive organizational context. A dynamic capability can be defined as a —learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness (Zollo and Winter, 2002, p. 340).

To address the sustainability of various process improvement activities, Dale, Boaden, Wilcox, and McQuater (1997) identified key TQM sustainability issues through qualitative research and reference to relevant theoretical literature. Keating (1999) worked with research partners to address general process improvement program sustainability. System dynamics modeling analysis explained both internal dynamics and external interactions that appear to influence the sustainability of process improvement activities. Pillet and Maire (2008) surveyed 40 organizations to examine their performance across different types of improvement activities (e.g., 5S, ISO9000, etc.) and to understand the factors that they viewed as most important for sustainability. Across multiple process improvement activities, organizations sustained, on average, 40 percent of improvements, which further illustrates the difficulty that organizations have in sustaining improvements. Based on the survey results, the authors created a model of process improvement sustainability that was based on three —axes organic state (the state

towards which the organization will trend with no effort and absence of constraints), return on effort (reinforcing activities to encourage desired improvement activities), and facilitation (developing skills, group synergy, and simplified processes to support the desired improvement activities) (Pillet and Maire, 2008).

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

2.7. Conceptual Frame Work (Model) of the Study

Based on the presented literature, the preliminary model of Kaizen event outcome sustainability is presented. The model excludes any variables from the institutionalization models that relate to individual measures because the unit of analysis for this research is the organizational unit as opposed to the individual employee. The model also excludes the variable, diffusion, as this research is only concerned with the sustainability of a Kaizen event outcome within its work area of origin as opposed to its adoption across other work areas. This section explains the four categories of variables that are included in the model (Kaizen Event Characteristics, Work Area Characteristics, Post-Event Characteristics, and Sustainability Outcomes). For each category, an explanation regarding how the variables in the category relate to the institutionalizing change models is provided. Then, additional literature support regarding how the variables relate to previous research of the sustainability of Kaizen event or other improvement approaches is provided.

2.7.1. Kaizen Event Characteristics

The present research identifies and measures four Kaizen Event Characteristics that impact Kaizen event outcome sustainability: goal clarity, goal difficulty, team functional heterogeneity, and management support. These factors describe the structure of the change, including the goals, strategies, tactics, and programs of change. Certain structural features of change programs have been found to impact the institutionalization of change.

According to Goodman and Dean(1982) research finding change programs with more specific goals have been found to exhibit higher levels of institutionalization, Change mechanisms that

have more highly programmed structural features have been found to exhibit higher levels of institutionalization. For example, parallel work teams have been found to have detailed, explicit documents that defined the team's design, composition, meeting time, intergroup relationships, and procedures for initiating a meeting. Autonomous work groups, on the other hand, defined their own sets of self-governing decisions. The highly programmed parallel work teams exhibited higher levels of institutionalization than the autonomous work groups with structural features that were programmed to a lesser extent and the presence of an internal support system has also been found to impact the institutionalization of change.

The following presents the definitions of the proposed Kaizen Event Characteristics. Farris, (2006) also presents the relevant literature that supports the inclusion of each factor for further study.

Goal clarity is defined as the extent to which the team's objectives have been explicitly defined. Organizational change research emphasizes the importance of clear goals in order to sustain organizational change (Oxtoby, 2002). Goal difficulty describes the subjective difficulty of event objectives as perceived by team members. Process improvement literature suggests that project scope and project complexity may negatively impact sustainability of improvement (Keating , 1999).

Team functional heterogeneity describes the diversity of functional expertise within the Kaizen event team. Kaizen event sustainability literature suggests that the development of a cross-functional team supports the sustainability of Kaizen event outcomes (Patil, 2003).

Management support describes the support that senior leadership provided to the team, including materials and supplies, equipment, and assistance from organizational members. A lack of management support has been found to be an inhibitor of Kaizen event outcome sustainability (Bateman, 2005).

One caveat regarding the use of the institutionalization theory to model Kaizen event outcome sustainability is that the change programs referred to in the institutionalization research were change mechanisms that generally used the same program participants throughout the implementation and maintenance of the change. Sustaining changes from the Kaizen event depends upon an entity other than the Kaizen event team: the targeted work area. Therefore, certain aspects of the improvement mechanism structure (i.e., Kaizen event) may not influence outcome sustainability to the same extent as the structural characteristics of the work area. For example, interpersonal relationships of the Kaizen event team may not influence outcome

sustainability to the same extent as the interpersonal relationships of the work area and its employees.

Furthermore, some Kaizen event team and process characteristics that were considered in the study of initial success (Farris, 2006), specifically team Kaizen experience, team leader experience, team autonomy, event planning process, action orientation, internal processes, tool quality, and tool appropriateness are not directly discussed as critical factors in the sustainability literature. While an indirect relationship between these factors and outcome sustainability may be inferred, these relationships may not adequately support the inclusion of these variables in the final model. For example, team Kaizen experience describes the average Kaizen event experience within the Kaizen event team. While the Kaizen event and organizational change literature does not directly relate team member experience to sustained outcomes, it is suggested that training employees in Kaizen events, including the training and learning that occurs during their participation during a Kaizen event, may support the sustainability of Kaizen event outcomes (Patil, 2003).

In this instance, while a connection between the variable and the sustainability literature can be inferred, it is a tenuous relationship. Therefore, certain variables that are specific to the behaviors and relationships of the Kaizen event team and processes may not be appropriate in the model of Kaizen event sustainability and are not included in the current research model. However, because these factors may lead to improvement directly after the Kaizen event T_0 (target performance) these factors may provide a better foundation for Kaizen event outcome sustainability T_1 (current performance).

2.7.2. Work Area Characteristics

Research by Glover (2010) identified and measured six perceptual Work Area Characteristics: knowledge of continuous improvement, external perspective, experimentation, internal collaboration, group stewardship, and work area routineness. Three proposed objective work area characteristics were also measured: management Kaizen event participation, workforce changes (including work area employee and management turnover), and production system changes (including changes to work area equipment, product volume and product mix). These factors relate to organizational characteristics that have been found to impact the institutionalization of change. Specifically, organizational change research has found that the values and norms of the work area (Goodman and Dean, 1982; Cummings and Worley, 1997), the overall perception that change was needed and valued by employees (Buller and McEvoy, 1989), how the skills of the work force align with the change (Walton, 1980; Goodman and Dean, 1982; Cummings and

Worley, 1997), and how the degree of stability in the organization's environment and technology may impact change sustainability (Goodman and Dean, 1982; Cummings and Worley, 1997).

The following describes each factor as supported by the relevant Kaizen event and general process improvement literature. Knowledge of continuous improvement is based on a measure defined in Doolen (2003) and relates to the extent to which the individuals have knowledge of the continuous improvement behaviors needed to sustain the change. Research has suggested that an awareness and understanding of continuous improvement knowledge may be important to the sustainability of improvement (e.g., Kaye and Anderson, 1999). Learning behaviors, external perspective, experimentation, and internal collaboration, and group stewardship are based on the study of group stewardship and group learning behaviors Groesbeck (2001). Learning behaviors are frequently cited as important to improvement sustainability (e.g., Upton, 1996; Kaye and Anderson, 1999; Burch, 2008; Anand, 2009).

External perspective can be described as the extent to which work area employees think about how their work relates to that of others, including to other work areas and the overall organization (Groesbeck, 2001). Learning through external perspective can occur through opportunities to communicate with other work areas (Axtell, 2000); communication across work areas may support continued improvement after a Kaizen event (Tennessen and Tonkin, 2008). As a part of experimentation, —team action is taken to test hypotheses or to discover and assess impact of action (Groesbeck, 2001, p. 71). Active experimentation with new ideas (Upton, 1996) has been found to be a key component of learning and knowledge development which may influence improvement outcome sustainability.

Internal collaboration refers to the extent to which —team members synthesize their divergent views such that apparent conflicts are resolved through dialectical thinking, not compromise or majority rule (Groesbeck, 2001). Through internal collaboration, work area employees are able to share experiences and lessons learned with peers; this exchange may influence improvement sustainability (e.g., Kaye and Anderson, 1998). Finally, group stewardship is defined as —a collectively held sense of responsibility to oversee and improve performance in the group's area of responsibility in accordance with the best interests of the organization (Groesbeck, 2001). The stewardship, or collective responsibility, of a group of work area employees may relate to their commitment to the improvement which may influence improvement outcome sustainability (e.g., Mann, 2005).

Work area routineness measures the general complexity of the target system, based on the level of stability of the product mix and degree of routineness of product flow (Farris, 2006). Although

not explicitly mentioned in the Kaizen event and general process and continuous improvement sustainability literature, one can infer that the complexity of a work area may impact the complexity and scope of an improvement effort; increased levels of project scope and project complexity may negatively impact sustainability of improvement (Keating, 1999).

Finally, while previous research has not directly studied the potential influence that objective changes in a work area after an improvement effort, related findings support their inclusion in the model. For example, a work area with a higher number of production system changes (including changes to work area equipment, product volume and product mix) may indicate that the work area is less stable, which may negatively influence improvement sustainability (Keating, 1999). Also, higher levels of workforce changes (including work area employee and management turnover) may indicate a lack of job security and a loss of knowledge in the work area which may negatively influence improvement sustainability (Dale, 1997; Keating, 1999).

2.7.3 Post-Event Characteristics

The present research identified and measured three Post-Event Characteristics: institutionalizing change, improvement culture, and performance review. The factors relate to the processes that have been found to impact change sustainability. Specifically, the individual factor items within these three measures refer to the socialization of the change (socialization), commitment of the individual to the change (commitment), the allocation of rewards based on the pursuit of behaviors that support the change (reward allocation), and processes used to measure the degree of institutionalization, feedback information, and corrective actions (sensing and recalibration) (Goodman and Dean, 1982; Cummings and Worley, 1997). The following describes each factor as supported by the relevant Kaizen event and general process improvement literature.

Institutionalizing change is defined in the research by Glover(2010) as a set of activities conducted to complete the implementation of changes and actions identified in the Kaizen event and to incorporate changes into the ongoing, everyday activities of the organization (Jacobs, 2002). Literature supporting this factor includes the Kaizen event sustainability research of Bateman (2005). Her research found that completing the Plan-Do-Check-Act cycle in closing out action items, including the formal recording of ideas and the formal introduction of new work methods, was a general enabler for process improvement sustainability. Specific practices related to institutionalizing change include training employees in new work methods (Heard, 1997; Goldacker, 2005), providing support for employees to complete action items after the event (Magdum and Whitman, 2007), and documenting changes to work methods (Miller, 2004; Patil, 2003; Magdum and Whitman, 2007).

Improvement culture is defined in the research by Glover (2010) as the encouragement of organizational improvement through management's support of the use of Kaizen events and continuous improvement activities among work area employees and Kaizen event team members. The existence of such efforts can be observed through management's support of work area employees and Kaizen event team members. For instance, Bateman and Rich (2003) identified a lack of management support as an inhibitor of Kaizen event sustainability. Specific practices related to improvement culture include recognition of employees (Oxtoby, 2002), management support of a continuous improvement culture (Bateman and Rich, 2003; Kaye and Anderson, 1999), and allowance of time to work on continuous improvement activities (Bateman, 2005).

Performance review is defined in this research as the extent to which the organization measures and evaluates the results of the Kaizen event. The literature emphasizes the regular use of performance measurement and assessment mechanisms. For example, Kaye and Anderson (1999) identified the establishment of performance measurement and feedback systems as a key criterion for continuous improvement. Specific practices related to performance review include the review of Kaizen event performance measurement data (Kaye and Anderson, 1999; Bateman, 2005), use of audits and audit reporting tools (Kaye and Anderson, 1999; Martin and Osterling, 2007; Patil, 2003), regular follow-up meetings of the Kaizen event team (Martin and Osterling, 2007; Palmer, 2001), and regular follow-up reports and meetings to management (Goldacker, 2005; Destefani, 2005; Magdum and Whitman, 2007).

2.7.4 Sustainability Outcomes

Research by Grover (2010) identified and measured three technical system outcomes and two social system outcomes: goal sustainability, result sustainability, impact on area sustainability, work area attitude, and work area commitment. All of the outcome variables were adapted from variables originally developed by Doolen, (2003) and Farris (2006). These outcomes also relate to the institutionalization models. Goal sustainability and result sustainability relate to the extent to which the change has improved the overall performance of the work area (Buller and McEvoy, 1989). Impact on area sustainability relates to the extent to which the change has a lasting impact on the work area (Buller and McEvoy, 1989). Work area attitude, relates to the extent to which the work area employees like or dislike the change (Goodman and Dean, 1982) and work area commitment refers to the work area employees' belief in the value and need of the change mechanism (Buller and McEvoy, 1989). The following describes each factor as supported by the relevant Kaizen event and general process improvement literature.

Goal sustainability compares current (T_1) performance to the targeted (T_0) goals of the work area (Patil, 2003; Magdum and Whitman, 2007), while result sustainability compares current (T_1) performance to the recorded (T_0) performance from the conclusion of the improvement effort (Bateman, 2005; Magdum and Whitman, 2007). The perception of the lasting impact of a Kaizen event on a work area, i.e., impact on area sustainability, may have implications for both technical system results and social system outcomes (Keating , 1999) regarding the inclusion of the Sustainability Outcomes work area attitude and work area commitment, previous Kaizen event research, including Kaizen event outcome sustainability research, suggests that social system and technical system outcomes may be positively correlated (Farris, 2006; Magdum and Whitman, 2007). Thus providing additional support for a socio-technical systems perspective, specifically the inclusion of social system outcomes work area attitude and work area commitment in the present research.

Chapter Three

Research Design and Methodology

3.1. Introduction

This chapter treats the research design and methodology. In particular, it presents the population of the study, sample size and sampling techniques, sources of data, tools and procedures of data collection, reliability measures, method of analysis, and ethical considerations have been briefly explained below.

3.2. Research Method

The method of the research study emerges out of the nature of the problem and the purpose of the study (Kothari, 2001). The very focus of this study is to make a detailed investigation of factors affecting the sustainability of Kaizen event in Wolkite Poly-Technique College. It is a complete phenomenon that is affected by different factors. As a result the study was focused on basic factors that affect to sustain kaizen event.

To achieve the purpose of the research, descriptive research design method was employed because descriptive research helps to describe state of affair as it exist at present and report what happened or what is happening and finally discover the cause. This method also is selected on the assumption that it helps to gather enough information from many people on the issues under study (Corbin & Strauss, 2008). Investigation of kaizen practice (facts) and sustainability using descriptive research method allows the description of the present application status of kaizen. Best and Kahn (2002) on their part have noted that the relevance of this method for such a purpose.

In order to get the intended objectives of the study, both qualitative and quantitative research approaches was used because using one of the approaches independently in the study does not bring the intended results of the research. Moreover, according to Creswell (2003) each of the paradigms, which is quantitative and qualitative methodology have their own limitation. As a result, one can benefit much from using both quantitative and qualitative methodologies. Quantitative and qualitative approaches were employed to answer the basic research question raised earlier. Such mixed-method of research allows exploring relationships between variables in depth (Fraenkel & Norman, 1932).

The quantitative method was used to show the practical application of kaizen implementation, successes, and challenge to sustain. The researcher was used qualitative information from the participants for in-depth understanding of the state of affair.

Qualitative research is regarded as providing rich data from live experience of participants to understand behavior within its wider context (De Vaus, 2002).

The researcher used both the methodology (Embedded design). As the result the qualitative data were used to support the quantitative data. .

The benefits of this design is that allows for one method to lead the analysis with the secondary method provide additional information. For example, quantitative measures are excellent at recording the results of an experiment. Qualitative measures would be useful in determining how participants perceived their experience in the experiment. A downside to this approach making sure the secondary method is truly supporting the overall research. Quantitative and qualitative methods natural answer different research questions. Therefore, the research questions of a study must be worded in a way that allows for cooperation between qualitative and quantitative methods.

3.3. Sources of Data

Overall, this research was used both primary and secondary data through questionnaires and gathering data with interview.

3.3.1. Primary Sources of Data

Primary data were collected from trainers, department heads, shop assistances and core and supportive staff who are working in Wolkite Poly-technique College. Structured survey questionnaire and interview was used to obtain information from selected samples.

3.3.2. Secondary Sources of Data

Secondary sources were gathered from reports, minutes and documents of kaizen to enhance the data obtained from primary source.

3.4. Target Population

The total number of TVET Colleges in Gurage Zone was five. These were Arkit, Agena, Butajera, Emdibir and Wolkite. The target population of the study consisted only Wolkite because it was selected by EKI in SNNPR as a model to fully implementing 5S and take the award of EKI at federal level in 2006 E.C, taking rank of fist. However, it did not maintain its implementation as an ongoing activity. On the other hand, the rest were not fully exercising 5S so that they could not be the target population of the study.

Thus, in this study, the target population was the staff member's of Wolkite Poly-Technique College. The total population size was 233,among the total population 7 were core administrative

staff, 45 were supportive administrative staff. From the academic staff 7 were department heads, 13 shop assistance and 161 were trainers.

3.5. Sample Size and Sampling Technique

The total number of population selected from the target population constitutes 153 the respondents were selected using probability and non-probability sampling techniques. Accordingly, core and supportive administration staff were selected by purposive sampling techniques, because the one who manage and engage in the actual process regularly have a better position to know the source of problem. From 52 core and supportive administrative staff 22 process owners and officers were selected purposively. From 9 department heads 7 and, from 13 shop assistances 7 of them were selected by simple random sampling. To give equal chance and made the data reliable 120 trainers were selected as respondent out of 161 trainers by using simple random sampling.

Table 2 Sample Respondents of the study

The table below show number of sample selected from the target population of Wolkite Poly-technique College. .

N ^o	Respondent (sources of data)	Total in the college	Sample		method of data collection
			N ^o	%	
1.	Trainer's	161	120	74.5%	Questionnaire
2.	Department heads	9	7	77.7%	Questionnaire
3.	Shop assistances	13	7	54%	Questionnaire
4.	Core process owners and officers	7	7	100%	Interview
5.	Supportive process owners and officers	13	9	70%	Inter view
6.	General service employee	32	6	18.75%	Inter view
	Total	233	156	66.9%	

3.6. Data Collecting Instruments

The study was employed both qualitative and quantitative research approach to explore factors affecting sustainability of kaizen in Wolkite Poly-Technique College. Therefore, the researcher was used questionnaire to collect quantitative data and, interview to collect qualitative data. Direct personal observations involved during visiting of kaizen events of the College as a means of gathering data by watching, and recording the 5S implementation conditions. Since

administrative staff was few in number in comparison to academic staff; gathering and analyzing qualitative data made simple. So, interview was conducted for core and supportive staff of process owners and officers of the College. However, the questionnaire was used to collect data from 134(74.0%) of trainers, department heads and shop assistances. Instruments were constructed based on the extensive review of literature and basic questions of the study.

3.6.1. Questionnaire

Questionnaire is preferential research instrument because it enables the researcher to secure data from the sample respondents at a time and for its natural characteristics that allow them to express their ideas and opinions freely.

Combination of close and open ended questionnaire was administered to 72.2% of trainers, 77.7 % of department heads and 54% shop assistances. The reason to include open end questions in questionnaire was to give chance to respondents to forward their additional opinions.

3.6.2. Interview

Semi-structured interview was conducted by using list of specific questions to be discussed and was administered to 16 (85%) core and supportive staff process owners and officers of the College. Semi-structured interview helps to give respondents to forward their additional opinion than structured interview. More over it uses to gather information with facial gesture of respondents.

In this regard Kothari,(1985) stated that:

Interview in general is very flexible and can be used to collect large amounts of information. Trained interviewers can hold the respondent's attention and are available to clarify difficult questions. They can guide interviews, explore issues, and probe as the situation requires. Personal interview can be used in any of questionnaire and can be conducted fairly quickly. Interviewers can also show actual products, advertisements, packages and observe and record their reactions and behavior

3.6.3. Observation

Observation was conducted by the researcher to gather data to check whether sustainability activities such as kaizen event characteristics, work area characteristics, post event characteristics and social and technical characteristics were there or not in the College by using observation check list. The data gathered through observation thematically analyzed and substantiated with the data collected through questionnaires.

3.7. Procedures of Data Collection

In order to obtain data pertaining to the issues under investigation, the researcher used different research instruments to collect both primary and secondary data from the respective sources. Thus, the researcher developed the instruments to measure what factors do affect the sustainability of kaizen activity by involving trainer's, department heads, shop assistances, core and supportive staff owners and officers. The researcher also paid attention to the settings where the Kaizen implementation took place. Accordingly, the following data collection instruments were employed: interview guide to conduct semi-structured interviews, questionnaire to undertake survey, observation checklist to conduct observations and to assess the College through documentary analysis, documents, and other written materials as secondary data sources. Persistent observations during the visits of the College using observation checklists were used which provided a general and comprehensive understanding of the Wolkite Poly-technique College.

The researcher first thought about what exactly was needed from this study to construct the questionnaire. Next, the investigator decided on the types of questions. The researcher also decided on how to use the questionnaire - self-administered or interviewer administered (i. e. interview schedule). Here, the wording and the structure of the questions; length and ordering of questions; the beginning of questions with easy questions which respondents would enjoy answering, and thus encouraging them to continue filling in the responses of the items in the questionnaire; and grouping the questions into specific topics as this made it easier to understand and follow.

In the questionnaire, a total of 41 items on socio-demographic characteristics of the respondents, attitude towards the implementation of kaizen, factors affecting sustainability of kaizen , strengths, constraints, and suggestions were included in the questionnaire. This questionnaire were used to collect the data from different types of informants, such as the trainers, department heads, shop assistances and administrative staff of process owners and officer in the College. The items of the questionnaire were closed- and open- ended questions which were constructed in English.

For the purpose of actual study, the researcher conducted pre-testing in order to get constructive feedbacks and comments to verify the questions in the questionnaire, as well as the overall research process at miniature level. Next, the researcher incorporated those feedbacks and comments from different experts in the area.. A total of 134 questionnaires were distributed to those sampled respondents. Out of those questionnaires distributed, about nine (10)

questionnaires were lost and eight (8) were not filled properly. Finally, the researcher managed to collect data from 116 sample respondents. Likewise, 7 core process owners including top managers, 9 supportive process owners and officers and 6 general service workers were interviewed using semi-structured interviews. Generally, the response rate of the questionnaire was calculated to be 86.6 % which allowed further data analysis.

Information on the sustaining activities kaizen in the College best obtained through observations. It was believed to apply a structured observation checklist to conduct the observations and the researcher observes each department shop activities such as kaizen event characteristics, work area characteristics, post event characteristics and social and technical characteristics.

3.7.1. Pilot Study

Once the questionnaire was constructed, the researcher must pilot it in by taking two from each sample type such as trainers, department head, shop assistance and core and supportive staff member of the College. This means that the research instrument must be tested to see whether or not it obtained the results the researcher required. (Yin, 1994), the researchers in business related subjects traditionally limit case studies to exploratory use: a pilot study that can be used as a basis for formulating more precise questions or testable hypotheses.

First of all, the researcher asked those people who had not been involved in its construction to read it through and to see if there are any ambiguities which remained unnoticed. Once this has been done, alter the questions accordingly, then sent out a number of questionnaires to the types of people who would be taking part in the main survey. Now, the researcher had to make sure they knew it was a pilot test and ask them to forward any comments they may have about the length, structure and wording of the questionnaire. Based on the feedbacks generated from the pre-test and pilot study, the researcher went through each response very carefully, noted comments and looked at the answers to the questions. Finally, the researcher altered the questionnaire again.

3.8. Reliability

Trustworthiness of these research findings undertaken by employed different data collection instrument. Like those above-stated tools measures taken to ensure reliability and validity of data collected through the questionnaires, there are some measures to be considered to ensure reliability and validity of data from informants and measure of how well the items on the test measures based on the correlation between different items. It refers to the believability of the researcher's findings i.e. all types of activities that the researcher has done in designing, carrying out and reporting the research results to make them credible.

For the purpose of measuring internal consistency of the scales, Cronbach's alpha coefficient of correlation is used. This coefficient is a model of internal consistency, based on the average inter-item correlation, unlike other types of models..

The above-stated model assumes that observations should be independent, and errors should be uncorrelated between items. Each pair of items should have a bi-variant normal distribution. Scales should be additive, so that each item is linearly related to the score.

Therefore, those scaled items in the questionnaire were found to be reliable and valid because the Cronbach's alpha coefficient correlation was calculated to be .850 which is higher than .70 as stated in Table 3. One can conclude that those Likert Scales which are developed and designed to measure the attitude of those staff of Wolkite Poly-technique College, particularly the trainers department heads and shop assistances core towards the sustainability of kaizen strategy in different socio-cultural and economic contexts in Wolkite town Administration, SNNPR.

Table 3 **Reliability Statistics**

Cronbach's Alpha	Cronbach's alpha based on standardized items	N of Items
.877	.850	21

Generally, those items which are included in the questionnaire to measure different aspects of the trainer's department heads and shop assistances to the sustainability of kaizen strategy in Wolkite Poly-Technique College do have internal consistency, reliability and valid standards. Thus, those itemized Likert Scales could be used as reliable and valid scales to measure the attitude of the trainers, department heads and shop assistances at Wolkite Poly-Technique College.

3.9. Methods and Tool of Data Analysis and Interpretation

A total of 131 questionnaires were distributed to the sample respondents. However, only 116 questionnaires were completely filled in and returned to the researcher which made the response rate of about 86%. Thus, this rate may allow the researcher for further data analysis. Those major data collection methods used in this study were qualitative and quantitative which was semi structured interviews and questionnaires were used.

The quantitative data were analyzed through descriptive statistics with SPSS Version 20. While, the qualitative responses from semi-structured interviews with key informants, observations and documentary analyses were transcribed verbatim and analyzed using thematic analysis techniques respectively. Afterwards, the qualitative findings were presented theme by theme in order to triangulate the findings of the quantitative aspect of the study. Finally, these

thematic findings were integrated into those of the quantitative ones while writing-up the thesis. This kind of approach has an implication on the applicability of the findings to policy and practice settings (Simons, 2009). Therefore, the research report was prepared on the synthesis of the findings of the views of all the participants in the research process on sustainability of kaizen event in the College.

The dean, vice deans and process owners of the College were the key informant in-depth interviews. The selection of the other informants was done together with the willingness of the respondent. The selection criteria for the other informants were that they had been involved in kaizen implementation.

3.10. Ethical Considerations

It was mandatory to follow the guidelines for research with humans (Johnson & Christensen, 2004; Simons, 2009). Accordingly, the research participants in this research were given their informed consent prior to seeking their responses. The researcher did this by requesting permission from each Wolkite Poly-technique College core and supportive administrators, department heads, shop assistances and trainers through letters.

The researcher was also try to establish good relationship with all the questionnaire respondents and interviewees who selected in the research by making himself clear where he came from, why he decided to conduct the research, why he chose in the research, etc. It was not necessary to make use of deception in the form of withholding information because if the true purpose of the research was not revealed it would severely affect the result of the research (Johnson & Christensen, 2004). And it will also be arranged the questionnaire and interview without affecting or with the consent of each informant and interviewee. The participants' freedom of withdrawal at any time during the process of the discussion will be ensured by telling them so. This enabled them not to feel pressured in participating (Johnson & Christensen, 2004).

Since the aim of the study is for the improvement of the issue under the study, the researcher hopes all process was accomplished at the participants voluntarily consent without harming and threatening their personal and institutional wellbeing. Thus, all communication with institutions and participants will be undertake with open and honest way in considering the research ethical codes issues like anonymity (not the use of any names and address in the final report) and confidentiality (not disclose directly any information to the third party).

Chapter Four

Presentation Analysis and Interpretation of Data

This chapter deals with the presentation, analysis and interpretation of the data collected through questionnaire, interview and observation. In order to get the relevant information about the successes and factors affecting the sustainability of kaizen implementation, the data were gathered from trainers, department heads, shop assistances, core and supportive administrators of Wolkite Poly-Technique College.

The quantitative and qualitative data were collected and analyzed using descriptive statistics and thematic analysis techniques, respectively. This chapter presents data from quantitative, qualitative and observation. The first section is on demographic characteristics of the respondents. Section two is data analysis and interpretation, which examines the factors affecting the sustainability of kaizen events. It also discusses about knowhow of kaizen trainers and employees, attitude towards kaizen implementation and its benefit to the College. Next, strategies used to address the factors affecting the sustainability of kaizen implementation were discussed. Finally, the chapter summarizes those major results of the quantitative data analysis, and the findings of the qualitative data analysis in the research.

4.1. Demographic Characteristics of the Respondents

Table 4 .Demographic Characteristics of the Respondents Background

N ^o	Item		Trainers, dep. heads and shop assistances		Administrative staff		Total	
			N ^o	%	N ^o	%	N ^o	%
1.	Sex	Male	98	84.48	16	72.7	114	78.6
		Female	18	15.5	6	27.3	24	21.4
		Total	116	100	22	100	138	100
2.	Service years	1-5	94	81.03	2	12.5	96	72.7
		6-10	15	12.9	14	63.6	29	21.0
		11-15	1	0.86	4	25	5	3.78
		>16	6	5.17	2	12.5	8	6.06
		Total	116	100	22	100	138	100
3.	Level of education	A	5	4.3	3	18.75	8	6.06
		B	20	17.24	10	62.5	30	22.7
		C	91	78.4	9	40.9	100	72.5
		Total	116	100	22	100	138	100

Note: A-Level = Second Degree B-Level = First degree C-level = Diploma

Table 4 indicates the demographic characteristics of the respondents. As shown in the table total of 114(78.6%) of the respondents were males and 24(21.4%) were females. The majority of the respondents were males. Although, efforts were made to encourage female workers by the government, the data shows less contribution of female workers. This indicates less participation of females; and it has its own impact to enhance the existing low level of technology by manufacturing related sectors, which involves much more physical work. This implies possible means need to be sought and put in place for better technology utilization by participating females.

On the other hand, more than half of the respondents, 96 (72.7%) were found to have low level of service years (1 – 5 years), while the remaining, 34 (24.7%) had 6 to 15 years of service. Thus, the majority of the employee who have implementing and sustaining the kaizen strategy was less-experienced business firms. It is advisable to provided senior leadership support for the team of kaizen to sustain the kaizen implementation. Regarding their educational status, a small proportion of the respondents, 38 (28.8%), was A- level (Second Degree) and B-level (First Degree). However, a total of 100(72.5%) of the respondents were C-level (Diploma) in their educational status. This show that the general complexity of the target system or work area complexity. Work area routineness measures the general complexity of the target system, based on the level of stability of the product mix and degree of routineness of product flow (Farris, 2006). The complexity and scope of an improvement effort; increased levels of project scope and project complexity may negatively impact sustainability of improvement (Keating, 1999).So there is a need to upgrade educational status to reduce one factor affecting suitability of kaizen.

4.2. Analysis and Interpretation of Data

As shown in the review of related literature, sustainability of kaizen is a part of implementation phase. Sustaining is the end result of how well we have performed the four S's(Sort, Set in order, shine and Standardize). In the Sustainment stage, think of ways to eliminate effort in maintaining an area. It is by far the most difficult where you need to make it habit to properly maintain the new processes..

To this regard, respondents such as trainers, department heads, shop assistances were requested to give their views to those maintenance its continuity as a system on the 5 point Likert scale by choosing one among alternatives ranging from strongly agree (5) to strongly disagree(1) as follows in Table 5 below.

4.2.1. Respondents rating on Kaizen Event Characteristics

Table: 5 Respondents rating on Kaizen Event Characteristics Attending Kaizen Sustainability

Nº	Items on Sustainability System of Kaizen	Respondents							
		Frequency of Rating scale							
		SDA	DA	UD	AG	SA	T	M	SD
1.	There was clear goal to sustain kaizen in the College	3 (2.6%)	4 (3.4%)	8 (8.6%)	73 (62.9%)	26 (22.4%)	116 (100%)	3.99	0.9
2.	Task complexity negatively impact sustainability of improvement in the College	9 (7.8%)	14 (12.1%)	17 (14.7%)	61 (52.6%)	15 (12.9%)	116 (100%)	3.5	1.1
3.	There was diversity of functional expertise within the Kaizen event team	4 (3.4%)	10 (8.6%)	11 (9.5%)	76 (65.5%)	15 (12.9%)	116 (100%)	3.7	0.9
4.	There was support that senior leadership provided to the team, including materials and supplies, equipment, and assistance from organizational members.	18 (15.5%)	66 (56.9%)	10 (8.6%)	19 (16.4%)	3 (2.6%)	116 (100%)	2.3	1.0
5.	Trainers understand what continuous improvement (kaizen) is.	4 (3.4%)	12 (10.3%)	12 (10.3%)	52 (44.8%)	36 (31.0%)	116 (100%)	3.9	1.1
6.	Trainers understand how continuous improvement can be applied	5 (4.3%)	10 (8.6%)	19 (16.4%)	57 (49.1%)	25 (21.6%)	116 (100%)	3.8	1.1
	Total	43	116	79	338	120	696	3.5*	1.0**
	%	6.2	16.7	11.6	42.6	12.2	100		

SDA=strongly disagree , DA=disagree, UD=undecided, AG=agree, SA=strongly agree , (Number)* = average mean

(Number) ** = average standard deviation T=Total Number and M = mean value SD=Standard deviation

Note: The value SD (Standard deviation) show that by indicated amount the value rating deviate from mean value. If the deviation is high there is high variability

Item 1 of Table 5, the frequency and percentage of responses on view of respondents toward clear goal in the College to sustain Kaizen were depicted. The mean score of the respondents' attitude was calculated to be 3.99. This means that it is closer to four. They were found to agree with 'there was clear goal to sustain kaizen in the College'. This implies that team's objectives

have been explicitly defined so that almost little gap in this direction to sustain kaizen implementation.

Item 2 of Table 5, has drawn that the majority of the respondents agreed and strongly agreed on the factor that task complexity was negatively impact sustainability of continuous improvement. . This shows the mentioned gap was factor that negatively affect sustainability of kaizen. So, it need focus of responsible body to solve it.

Regarding the issue related to whether or not there is diversity of functional expertise within the Kaizen event team. Item 3 of Table 5, the respondents in the College showed their agreement with the statements. This implies majority of the Kaizen event team had team functional heterogeneity to sustain Kaizen. Thus functional heterogeneity wasn't be a factor that affect to sustain Kaizen in the College.

Item 4 of Table 5, majority of respondents strongly disagreed and disagreed with a question about support that senior leadership provided to the team, including materials and supplies, equipment, and assistance from organizational members to sustain Kaizen implementation. Therefore, they were few support that senior leadership provided to the team, including materials and supplies, equipment, and assistance from organizational members. So, there is a need of senior leadership to give attention to provide support to the team, including material and supplies. In item 5 of Table, 5, a total of 82(70.6%) of the respondents strongly agreed and agreed that trainers understand what continuous improvement (kaizen) is. There was no serious lack of knowledge on their part to sustain kaizen. This shows that the considerable majority of them believe that there were no shortage of training and knowledge Kaizen, to sustain kaizen implementation. There is also proper provision of training for trainers about kaizen.

As shown under Item 6 in Table 5, respondents strongly agreed and agreed with the issues related to the trainers understand how continuous improvement can be applied. This shows that no as such serious gap on understand how continuous improvement can be applied.

Moreover, the respondent were ask during interview whether or not they have knowledge of kaizen and whether or not kaizen implementation important for the College. They replied they had sufficient knowledge of kaizen through on job training facilitated by the college. Moreover, they gave their opinion on the benefit of kaizen to the College .They replied kaizen implementation brought different benefits for instance work area become comfortable for workers and work and reduce wastage of time and resource.

The interviewee asked if there is affecting factor to sustain kaizen implementation in their College. The respondents replied ,there are several factors that affect sustainability of kaizen.

Among these less commitment of employee and trainers, poor follow up and evaluation mechanism on the side of management were some of major gaps seen in the College.

4.2.2. Respondents rating on Work Area Characteristics

Table 6. Respondents rating on Work Area Characteristics Attending Kaizen Sustainability

N ^o	Items on Sustainability System of Kaizen	Respondents							
		Frequency of Rating scale							
		SDA	DA	UD	AG	SA	T	M	SD
1.	There was communication across work areas (departments) to support continued improvement after a Kaizen event.	4 (3.4%)	9 (7.6%)	17 (14.7%)	63 (54.3%)	23 (19.8%)	116 (100%)	3.8	0.96
2.	Work area trainers were able to share experiences and lessons learned with peers.	2 (1.7%)	13 (11.2%)	11 (9.5%)	67 (57.8%)	23 (19.8%)	116 (100%)	3.8	0.93
3.	Trainers try out new things by applying them in practice (Active experimentation with new ideas)	24 (20.7%)	56 (48.3%)	21 (18.1%)	12 (10.3%)	3 (2.6%)	116 (100%)	2.3	1.3
4.	There was collective responsibility of a group of work area among trainers.	4 (3.4%)	17 (14.7%)	15 (12.9%)	56 (48.3%)	24 (20.7%)	116 (100%)	3.7	1.1
5.	There was Work area trainers and management turnover.	13 (11.2%)	54 (46.6%)	21 (18.1%)	20 (17.2%)	8 (6.9%)	116 (100%)	2.6	1.1
6.	Management actively participates in kaizen event.	17 (14.7%)	54 (46.6%)	24 (20.7%)	17 (14.7%)	4 (3.4%)	116 (100%)	2.5	1.0
	Total	64	203	109	235	85	696	3.1*	1.1**
	%	9.2	29.2	15.7	33.7	12.2	100		

SDA=strongly disagree ,DA=disagree ,UD=undecided ,AG=agree ,SA=strongly agree (Number)* = average mean (Number) ** = average standard deviation , T=Total Number and M = mean value , SD=Standard deviation
 Note: The value SD (Standard deviation) show that by indicated amount the value rating deviate from mean value. If the deviation is high there is high variability.

As illustrated in item 1 of Table 7, more than half (74.1%) of the College respondents expressed that the level of communication across work areas (departments) to support continued improvement after a Kaizen event did attract them. Thus, this implies that there was no significant problem of communication to sustain kaizen in the College. So, the College can use as one good opportunity to sustain kaizen.

As indicated in Item 2 of Table 7, the Work area trainers were able to share experiences and lessons learned with peers. 67(57.8%) and 23 (19.8%) of the respondents were found to strongly agreed and agreed respectively with the above stated statement. This evidence implies that there was no as such serious gap to share experience to sustain kaizen. Hence, this indicates that learning with peer has capacitated them and the College has one important tool for future sustainability of kaizen implementation.

As shown in Table 7, Item 3, 80 (68.9%) of the respondents disagreed and strongly disagreed towards trainers active experimentation with new ideas. This indicates that the college had only few trainer's active experimentation with new ideas to develop knowledge and learning of trainer's. Active experimentation with new ideas (Upton, 1996) has been found to be a key component of learning and knowledge development which may influence improvement outcome sustainability. Thus, trainees and employee of the College expected to generate continuously new idea to attain continuous improvement.

As indicated in Table 7, item 4, the majority of the respondents thought that there was collective responsibility of a group of work area among trainers. This implies that more of the trainers possess Collective responsibility. Therefore the College can use this as an opportunity to sustain kaizen implementation.

In Table 7, Item 5 illustrated the responses of the respondents whether there was Work area trainers and management turnover. The majority of respondents disagreed and strongly disagreed to the statement. The finding indicated that more than half of the respondents assumed the College had no trainers and management turnover. So, the sustainability not drastically affected by this factor.

In item 6 of Table, 7, a total of 71(61.2%) of the respondents strongly disagreed and disagreed that Management actively participates in kaizen event. 24(20.6) not able to decide their agreement or disagreement. The rest 21(18.0%) expressed they agreed on the aforementioned statement. This implies that there was lack of active participation of management in kaizen. as a result there is a require of management to actively participate in the whole task of kaizen by showing a role model contribution.

4.2.3. Respondents rating on Post Event Characteristics

Table 7. Respondents rating on Post Event Characteristics Attending Kaizen Sustainability

Nº	Items on Sustainability System of Kaizen	Respondents							
		Frequency of Rating scale							
		SDA	DA	UD	AG	SA	T	M	SD
1.	To institutionalizing change every member of the organization completing the Plan-Do-Check-Act cycle.	20 (17.2%)	46 (39.7%)	20 (17.2%)	26 (22.4%)	4 (3.4%)	116 (100%)	2.4	1.1
2.	Management's support of work area employees and Kaizen event team (QCC) members include Rewarding and recognition of employees	10 (8.6%)	46 (39.7%)	24 (20.7%)	26 (24.4%)	10 (8.6%)	116 (100%)	2.2	1.1
3.	The work area employees dislike the change	19 (16.4%)	47 (40.5%)	21 (18.1%)	26 (22.4%)	3 (2.6%)	116 (100%)	2.5	1.1
4.	The work area employees 'belief in the value and need of the change mechanism.	14 (12.1%)	64 (55.2%)	21 (18.1%)	13 (11.2%)	4 (3.4%)	116 (100%)	2.4	1.0
5.	Management blame or negativity when team goals were not achieved.	16 (13.8%)	53 (45.7%)	24 (20.7%)	19 (16.4%)	4 (3.4%)	116 (100%)	2.5	1.0
6.	There is progress or follow-up and Meetings with Kaizen coordinator or facilitator	24 (20.7%)	50 (43.1%)	15 (12.9%)	17 (14.7%)	10 (8.6%)	116 (100%)	2.5	1.2
7.	Conducting regular audits on changes made kaizen implementation by kaizen coordinator.	24 (20.7%)	52 (44.8%)	11 (9.5%)	18 (15.5%)	11 (9.5%)	116 (100%)	2.5	1.2
8.	There was meetings with management about kaizen	19 (16.4%)	51 (43.9%)	20 (17.2%)	18 (15.5%)	8 (6.9%)	116 (100%)	2.5	1.1
9.	Employee freely shares information with one another.	7 (6.0%)	11 (9.5%)	17 (14.7%)	47 (40.5%)	34 (29.3%)	116 (100%)	3.8	1.1
	Total Number	153	420	173	210	88	1044	2.5*	1.1**
	%	14.7	40.2	16.6	20.1	8.4	100		

SDA=strongly disagree ,DA=disagree ,UD=undecided ,AG=agree ,SA=strongly agree (Number)* = average mean

(Number) ** = average standard deviation , T=Total Number and M = mean value , SD=Standard deviation

Note: The value SD (Standard deviation) show that by indicated amount the value rating deviate from mean value. If the deviation is high there is high variability.

As indicated in Table 8, item 1, 66(56.9%) of the respondents were strongly disagreed and disagreed on whether every member of the organization completing the Plan-Do-Check-Act cycle. According to literature this implies that this factor includes the Kaizen event sustainability research of Bateman (2005). Her research found that completing the Plan-Do-Check-Act cycle in closing out action items, including the formal recording of ideas and the formal introduction of new work methods, was a general enabler for process improvement sustainability. However, every member of the organization not completing the Plan-Do-Check-Act cycles, this implies that in this area there was one factor affecting sustainability of kaizen in the College. There for applying the Plan-Do-Check-Act cycles regularly important for sustainability of kaizen.

In responding to Item 2, of Table 8, whether the management's support of work area employees and Kaizen event team members include rewarding and recognition of employees; almost half of them accepted the shortage of management's support, include rewarding and recognition of employees in the College.. Hence Bateman and Rich (2003) identified a lack of management support as an inhibitor of Kaizen event sustainability. Reward and recognition can motivate those individuals and groups to continue their active participation in the organization. It will also create a positive environment for various teams to compete against each other and these give a 'win-win' situation between the organization and employees (Yukl, 2010). This implies that the lack of management's support, include rewarding and recognition of employees was one of the factor affecting the sustainability of kaizen in the College. Therefore, the College should think of the way to support employee and prepare itself for appropriate rewarding and recognizing system.

As shown Table 8, Item 3, the majority of respondents strongly disagreed and disagreed with the issues related to the work area employees dislike the change. This indicates that respondents like the change. Therefore work area employees dislike the change was not severe considerably sustainability kaizen implementation in the College.

As disclosed Item 4 of Table 8, the majority of respondents strongly disagreed and disagreed. This indicated that 78 (67.2%) of the respondents confirmed that there was lack of belief in the value and need of the change mechanism on the part of work area employees. work area commitment refers to the work area employees 'belief in the value and need of the change mechanism (Buller and McEvoy, 1989). The finding implies lack of commitment of employee. For that reason, the College be supposed to facilitate awareness programs to initiate their commitment towards sustainability of kaizen.

As indicated on Table 8, item 5 concerning management blame or negativity when team goals are not achieved respondents shows that 69 (59.5%) of respondents was not accept management blame or negativity when team goals are not achieved. . Since, more of respondents accept no management blame when team goal is not achieved. So, this part was not serious factor affect sustainability of kaizen in the college. But, the College should consider response of respondents who says there was blame or negatively when team goals are not achieved to not create even few gaps for the sustainability of kaizen.

In the items 6 of Table 8, the perception of respondents level of agreement towards progress or follow-up and meetings with Kaizen coordinator or facilitator to sustain kaizen implementation indicates that, 74(63.8%) were strongly disagreed and disagreed. The literature show that regular follow-up meetings of the Kaizen event team (Martin and Osterling, 2007; Palmer, 2001), and regular follow-up reports and meetings to management (Goldacker, 2005; Destefani, 2005; Magdum and Whitman, 2007). This shows that, there were lack of follow-up and meetings with Kaizen coordinator or facilitator in the College. So, there is an assignment here for the College to raise contact with Kaizen coordinators. and adjust regular follow-up for each QCC.

Regarding conducting regular audits on changes made kaizen implementation by kaizen coordinator. As the empirical finding indicates 76(65.5%) of respondents accept that there is scarcity of regular audit on kaizen implementation Therefore, from the evidence more emphasis gave to greater percent. This indicates there was lack of regular auditing in the College. Thus, to sustain kaizen conducting regular audit and providing feedback are vital.

Concerning the meetings with management about kaizen, on Table 8, item 8, the majority of the respondents 70(60.3%) of department heads, shop assistances and trainers strongly disagree and disagree with the statement. Whereas, 26 (22.4 %) strongly agreed and agreed and 20(17.2%) respondents were undecided. This implies that there exists lack of meeting with management to sustain kaizen implementation.

Lastly, table 8 of item 9, 81 (69.8 %) of the respondents were rated strongly agreed and agreed on employee freely shares information with one another, this indicates that, employee freely sharing of information with one another was not factor affecting sustainability of kaizen implementation.

The researcher interviewed respondents regarding whether employee show sense of accountability for the work they do in sustaining kaizen. More than half the respondent replied there is lack of sense of accountability. The reason they forward is there was no as such regular plan- do- check activity, evaluation and feedback system so that, they develop negligence on

kaizen activities. whereas few respondent reply there was sense of accountability on few employee. However ,this not brought change to the Colleges on sustaining kaizen activities.

Regarding the question do you think there was a regular audit, rewarding and recognizing system in your College on changes made kaizen implementation by kaizen coordinator and management to sustain kaizen? More of respondent's replies there was lack of a regular audit, rewarding and recognizing system in the College. Even though there was some start but it is not significant to activate the employee to wards sustaining kaizen implementation .

Furthermore; analyzed data of respondents from interview regarding the question, how the factors affecting sustainability of kaizen faced in you College? The respondents replied as follow,

Even if, kaizen Implementation have success history, kaizen not become ongoing activity of the College. The main factors were lack of awareness and less sense of responsibility, lack commitment were some of affecting factors faced to sustain kaizen. The other respondent replied shortage of training on attitudinal change, less participation of management body, lack of well trained staff, lack of applying techniques of sustaining kaizen and PDAC in the College.

The other respondent replied, factors affecting sustainability of kaizen implementation arises from inappropriateness of building, thought kaizen as simple only shining activity, work load of employee (employee made the busy in transitory work), expecting fast change and financial challenges.

What solutions do you propose to alleviate those factors affecting sustainability of kaizen in your institution? The respondents recommended the following solutions. To sustain kaizen the College should be encouraged and motivate proper implementers. Coordinators should provide awareness to create responsibility and accountability including commitment for the whole staff, Coordinators and the concerned body including management should regularly visit and audit the kaizen work. The College should provide continuous training and refreshment course for the trainees and staff. The other respondent replied the management body should give emphasis to kaizen and should lead it and allocate sufficient budget and enough supervisors including kaizen focal person.

To support the quantitative data, observation were made in workshop of departments in the College. and, analyzed as follows

The researcher try to get information in depth by observing work area characteristics, kaizen event characteristics ,post event characteristics, in each shop of the departments. Based on the check list firstly observe whether there exist Plan, clear goal and task complexity of trainers. The

information gathered show that there was no organized and successive plan to perform task, there were no sufficient written clear goals and since most of trainers C-Level they face task complexity. Secondly try to observe from document whether or not communication across department, conducting regular audits feedback and senior leaders support. The researcher approved from the document he observed ,little communication among department, lack of senior leadership support and no organized feedback of regular audit by kaizen coordinators.

. Concerning sharing experiences and lessons learned with peers, active experimentation with new ideas and meetings with management about kaizen; the researcher observes from the minutes of department availability of sharing experiences and lessons learned with peers but there was lack of active experimentation with new ideas , meetings with management and active participation of management about kaizen.

4.3. Summary of Analysis

The major results of the quantitative data analysis and the findings of the qualitative data analysis in the research summarized as follow:

The demographic characteristics of the respondents show the majority of the respondents were males. Although, efforts were made to encourage female workers by the government, the data shows less contribution of female workers. On the other hand, more than half of respondents were found to have low level of service. Thus, the majority of the employee who have implementing and sustaining the kaizen strategy was less-experienced business firms.

Among kaizen event characteristics the majority of respondent's replies that task complexity, senior leadership support provided to the team were factors affecting sustainability kaizen in the College. Whereas clarity of goal, functional heterogeneity of team of quality control circles (QCC), understanding of employee on continuous improvement and how continuous improvement can be applied were not factors affecting sustainability of kaizen .The qualitative finding from the interview also supports the data analyzed through quantitative analysis technique.

From work area characteristics the majority of respondents replies that trainer's active experimentation with new ideas to develop knowledge and learning of trainer's , Management actively participates in kaizen event, were factors affecting sustainability kaizen in the College. While, communication across work areas, sharing of experiences and lessons learned with peers, collective responsibility of a group of work area and trainers and management turnover were not factors affecting sustainability of kaizen .Moreover, qualitative finding from the observation and data analysis also supports the data analyzed through quantitative analysis technique. The

majority of respondents replies on post event characteristics and social and technical characteristics such as completing the Plan-Do-Check-Act cycle, management's support of work area employees and Kaizen event team members include rewarding and recognition of employees, follow-up and meetings with Kaizen coordinator, conducting regular audits on changes made kaizen implementation and meetings with management about kaizen were factors affecting sustainability kaizen in the College. Whereas, post event characteristic such as whether employees dislike the change, work area commitment of employees, management blame or negativity when team goals are not achieved, and free sharing of information with one another were not factors affecting sustainability of kaizen .The qualitative finding from the interview supports the analysis through quantitative analysis technique.

4.4. Suggested Solutions to Mitigate the Problem Listed Above

Strategies used to address the factor affecting the sustainability of kaizen implementation were (1) Arrange upgrading program to trainers and employees. (2) Organize the kaizen office providing sufficient human, material and financial resource. (3) Plan and create awareness on active participation and work area commitment of management ,trainers and in the kaizen activity.(4) Develop regular auditing, recognizing, awarding mechanism to those employee generate new ideas and who possesses well performance, (5) Develop mechanism of follow up , setting regular meeting program with management and develop methods for continuous implementation of PDAC cycle.

Chapter Five

5.0 Summary, Conclusion and Recommendation

This part of the thesis presents summaries of the major findings, conclusions and recommendations.

5.1 Summary

In the attempt to study the problems and in order to provide a sound basis for an objective assessment and correct understanding of the actual situation of the problem the following basic questions were raised. What Kaizen Event Characteristics do affect the sustainability of Kaizen event outcomes in Wolkite Poly-Technique College? What work area characteristics do affect the sustainability of Kaizen event outcomes in Wolkite Poly-Technique College? What Post event characteristics do affect the sustainability of Kaizen event outcomes in Wolkite Poly-Technique College? What Social and technical characteristics do affect the sustainability of Kaizen event outcomes in Wolkite Poly-Technique College? In order to answer those research questions and address both general and specific objective of the research, the researcher employed research methods to collect quantitative and qualitative data. Therefore, based on the results of quantitative research, and the findings of the qualitative research; the researcher drew conclusions by putting them together in the light of the objectives of the research.

The study was carried out in Wolkite Poly-Technique College in SNNPR. The study employed descriptive survey; the respondents of the study were Department Heads, shop assistances, trainers, core and supportive staff of the colleges. Accordingly, the respondents sampling was carried out through probable sampling and purposive sampling techniques. Trainers, department heads, shop assistances were selected through simple random sampling technique and core and supportive administrators were selected through purposive sampling techniques. The information received from different data can be compared with each other, which increases the validity of the research” (Silverma, D, 1993).

Questionnaire, interviews and document analysis were used to obtain information from respondents. The data obtained were analyzed using statistical tools such as percentages, frequency distribution and mean. Depending on the result the analysis made.

The major results of the quantitative data analysis and the findings of the qualitative data analysis in the research summarized as follow:

The demographic characteristics of the respondents show the majority of the respondents were males. Although, efforts were made to encourage female workers by the government, the data shows less contribution of female workers. On the other hand, more than half or respondents

were found to have low level of service. Thus, the majority of the employee who have implementing and sustaining the kaizen strategy was less-experienced business firms.

Among kaizen event characteristics the majority of respondent's replies that task complexity, senior leadership support provided to the team were factors affecting sustainability kaizen in the College. Whereas clarity of goal, functional heterogeneity of team of quality control circles (QCC), understanding of employee on continuous improvement and how continuous improvement can be applied were not factors affecting sustainability of kaizen. The qualitative finding from the interview also supports the data analyzed through quantitative analysis technique.

The frequency and percentage of responses on view of respondents toward clear goal in the College to sustain Kaizen were depicted. The mean score of the respondents' attitude was calculated to be 3.9. This means that it is closer to four. They were found to agree with 'there was clear goal to sustain kaizen in the College'. This implies that team's objectives have been explicitly defined so that no serious gap in this direction to sustain kaizen implementation.

According to the finding 61 (52.6%), and 15 (12.9%) of the respondents agree and strongly agree respectively. This shows that half of the respondents in the College accept the idea that task complexity was negatively impact sustainability of continuous improvement.

Regarding the issue related to whether or not there is diversity of functional expertise within the Kaizen event team. The respondents in the College showed their agreement with the statements. This implies majority of the Kaizen event team had team functional heterogeneity to sustain Kaizen. Thus functional heterogeneity wasn't factor that affect to sustain Kaizen in the College.

The majority 84 (72.4%) of respondents strongly disagreed and disagreed with a question about support that senior leadership provided to the team, including materials and supplies, equipment, and assistance from organizational members to sustain Kaizen implementation. Therefore, they were no sufficient support that senior leadership provided to the team, including materials and supplies, equipment, and assistance from organizational members. This implies support that senior leadership provided to the team; including materials and supplies, equipment, and assistance from organizational members were factor affecting sustainability of kaizen

A total of 82(70.6%) of the respondents strongly agreed and agreed that trainers understand what continuous improvement (kaizen) is. There was severe lack of knowledge on their part to sustain kaizen. This shows that the considerable majority of them believe that there were no shortage of training and knowledge Kaizen, to sustain kaizen implementation. There is also proper provision of training for trainers about kaizen

The respondents strongly agreed and agreed with the issues related to the trainers understand how continuous improvement can be applied. This shows that no gap on understand how continuous improvement can be applied.

From work area characteristics the majority of respondents replies that trainer's active experimentation with new ideas to develop knowledge and learning of trainer's , Management actively participates in kaizen event, were factors affecting sustainability kaizen in the College. While, communication across work areas, sharing of experiences and lessons learned with peers, collective responsibility of a group of work area and trainers and management turnover were not factors affecting sustainability of kaizen .Moreover, qualitative finding from the observation and data analysis also supports the data analyzed through quantitative analysis technique.

The respondents of 80(68.9%) disagreed and strongly disagreed towards trainers active experimentation with new ideas.This indicates that the college had no trainer's active experimentation with new ideas to develop knowledge and learning of trainer's.

A total of 71(61.2%) of the respondents strongly disagreed and disagreed that Management actively participates in kaizen event.. This implies that there was lack of actively participation of management in kaizen.

More than half (74.1%) of the College respondents expressed that the level of communication across work areas (departments) to support continued improvement after a Kaizen event did attract them. Thus, this implies that there was no significant problem of communication to sustain kaizen in the College.

The Work area trainers were able to share experiences and lessons learned with peers. 67(57.8%) and 23 (19.8%) of the respondents were found to strongly agreed and agreed respectively with the above stated statement. This evidence implies that there was no as such serious gap to share experience to sustain kaizen. Hence, this indicates that learning with peer has capacitated them and the College has one important tool for future sustainability of kaizen implementation.

The majority of the respondents thought that there was collective responsibility of a group of work area among trainers. This implies that more of the trainers possess Collective responsibility. Therefore the College can use this as an opportunity to sustain kaizen implementation.

The responses of the respondents whether there was Work area trainers and management turnover. The majority of respondents disagreed and strongly disagreed to the statement. The finding indicated that more than half of the respondents assumed the College had no trainers and management turnover.

The majority of respondents replies on post event characteristics and social and technical characteristics such as completing the Plan-Do-Check-Act cycle, management's support of work area employees and Kaizen event team members include rewarding and recognition of employees, follow-up and meetings with Kaizen coordinator, conducting regular audits on changes made kaizen implementation and meetings with management about kaizen were factors affecting sustainability kaizen in the College. Whereas, post event characteristic such as whether employees dislike the change, work area commitment of employees, management blame or negativity when team goals are not achieved, and free sharing of information with one another were not factors affecting sustainability of kaizen .The qualitative finding from the interview supports the analysis through quantitative analysis technique.

The respondents of 66(56.9%) were strongly disagreed and disagreed on whether every member of the organization completing the Plan-Do-Check-Act cycle. This implies that this was one factor which had an effect on sustainability kaizen in the College.

Regarding the management's support of work area employees and Kaizen event team members include rewarding and recognition of employees, almost half of them accepted the shortage of management's support, include rewarding and recognition of employees in the College.. This implies that the lack of management's support, include rewarding and recognition of employees was one of the one of the factor that affect sustainability of kaizen in the College.

The majority of respondents strongly disagreed. This indicated that 78 (67.2%) of the respondents confirmed that there was lack of belief in the value and need of the change mechanism on the part of work area employees. Therefore the finding implies lack of commitment of employee.

The perception of respondents level of agreement towards progress or follow-up and meetings with Kaizen coordinator or facilitator to sustain kaizen implementation indicates that, 74(63.8%) were strongly disagreed and disagreed. This shows that, there were lack of follow-up and meetings with Kaizen coordinator or facilitator in the College.

Regarding conducting regular audits on changes made kaizen implementation by kaizen coordinator. As the empirical finding indicates 76(65.5%) of respondents accept there is scarcity regular audit on kaizen implementation Therefore from the evidence more emphasis gave to greater percent. So there was lack of regular auditing in the College.

Concerning the meetings with management about kaizen, the majority of the total respondents 70(60.3%) of department heads, shop assistances and trainers strongly disagree and disagree with

the statement. This implies that there exists lack of meeting with management to sustain kaizen implementation.

The majority of respondents strongly disagreed and disagreed with the issues related to the work area employees dislike the change. This indicates that respondents like the change. Therefore work area employees dislike the change was not factor affecting sustainability kaizen implementation in the College.

Concerning management blame or negativity when team goals are not achieved respondents shows that 69 (59.5%) of respondents was not accept management blame or negativity when team goals are not achieved. . Since, more of respondents accept no management blame when team goal is not achieved so this part was not serious factor affecting the sustainability of kaizen in the college.

Lastly, the respondents were rated strongly agreed and agreed on employee freely shares information with one another, this indicates that, employee freely sharing of information with one another was not factor affecting sustainability of kaizen implementation.

5.2 Conclusions

A skillful person at any level is significant to a country's development. To this end, there may be various means of training programs were applied to make the trainees acceptable to the companies with some skill's and knowledge's of his/her field of the study . Among some, kaizen as a continuous improvement, were implemented in the workshop of the colleges. In line with this, this research is intended to investigate factor affecting sustainability of kaizen implementation in Wolkite poly-technique College. To investigate this, quantitative and qualitative research approach was employed.

Lastly, based on the findings discussed above the following conclusions have been drawn.

1. The finding indicate the status of management body in the activity to sustain kaizen in the College is little. The majority of respondents replies completing the Plan-Do-Check-Act cycle, management's support of work area employees and Kaizen event team members include rewarding and recognition of employees, follow-up and meetings with management, conducting regular audits on changes made kaizen implementation and meetings with management about kaizen, lack of provision of appropriate resource on time were factors affecting sustainability kaizen in the College So, to successfully plan and organize college's kaizen implementation and sustainability activities the management should posses, applying PDAC cycle, active participation on Kaizen activity ,regular meeting with QCC, develop regular audit and evaluation system with it feedback

,establishing durable rewarding and recognizing system, facilitating the necessary resource are vital.

2. The study showed that the major functions that Kaizen coordinators and main kaizen team were, not performed well. From the PDAC cycle up to monitoring and evaluation of the kaizen activity, giving feedback and facilitating rewarding and recognition system were disappointing. Moreover, there were deficiency in senior leadership support for QCC.
3. The outcome of the research shows that trainers belief in value need of change, commitment and generating new idea (active experimentation) to sustain kaizen very low. Trainers have many roles to play in the college. One major role is training; additionally they participating in college's management activities participate in the supervision during the companies training, preparing modules for short term training for SME s, implement kaizen in the workshop and in the SME too. Moreover, the research finding indicates there were task complexity. Thus, the College need to give an emphasis to upgrade their educational status and hold successive awareness program to change their beliefs, commitment and idea generating experience.
4. The research also point out the existence of some factors necessary for sustainability of kaizen implementation, such as clarity of goal, diversity of functional heterogeneity, communication across work area, sharing experience, collective responsibility on work area, few turnover of management were some of the good opportunities to be used in future sustainability activity kaizen implementation in the College.

5.3 Recommendations

Based on those findings of the research and conclusions drawn from them, the researcher suggests the following possible recommendations for action to be undertaken by each stakeholder at different levels to improve sustainability of kaizen implementation in the College.

Recommendation for Management of the College/ College dean

1. According to Imai (1986), kaizen management philosophies and practices consist of three pillars of kaizen that are: housekeeping/5s, waste elimination and standardization. As he stated, the management and employees must work together to fulfill the requirements for each category.
 - a. Management actively participate in kaizen event.
It is necessary to take the leading by involving as role model

- b. Management facilitate Meetings with trainers and employee to sustaining kaizen activity
Supposed to meet with employee and trainers with regular meeting to sustaining kaizen activity
 - c. Management's support of work area employees and Kaizen event team members by providing reasonable resource and gracious idea.
 - d. Management set constant rewarding and recognition system of employees
As shown in the findings, the absence of reward and recognition to kaizen implementers was mention as one of the constraints to make kaizen sustainable. To alleviate this problems, the colleges management have to practices different types of reward and recognition strategies to motivate the employees through providing certificates, monitory reward and promotion though carrier structure; appreciating the work of employee through Poster on kaizen board, intensifying in workshops, using leaflets .
2. Recommendation for the main kaizen team / focal person of the College
- a. Essential to arrange compulsory programs to create continuous awareness program to change the attitude and to develop employee sense of commitment and responsibility.
 - b. Necessary to conducting regular audits on changes made kaizen implementation by kaizen coordinators .Kaizen implementers should be assessed objectively by the skilled supervisors, sustainable monitoring and evaluation and feedback system, the communication system should be improved.
 - c. To institutionalizing change every member of the organization completing the Plan-Do-Check-Act cycle.
 - d. The study shows that to make kaizen system sustainable in the higher learning institutions, it is essential to give some sort of responsibility to seniors leadership to provide support for the team, including materials and supplies, equipment, and assistance to organizational members. The kaizen officer should facilitate experience share senior leader and juniors.
 - e. Follow up programs are essential to know the level of performance of the kaizen activity Therefore,
 - i. Scheduled follow up program by kaizen facilitators helps to evaluate the sustaining program.

- ii. Follow up by the management body of the College not only help to see the sustainability of kaizen, but also ensures that they have executed their roles and responsibilities.
- 3. Recommendation to SNNPR TVET bureau
 - a. Establish regular follow up system and give reward and recognition for those TVET Colleges that try to sustaining kaizen activity.
 - b. Conduct additional research on sustainability of kaizen and share the finding to TVET Colleges.

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Appendices

Appendix (A)

Adama Science and Technology University

School of Educational Science & Technology Teachers Education

Department of Educational Leadership & Management

Questionnaires to be filled by trainers and department heads and shop assistances

Introduction and purpose

Dear Participant:

Thank you for the willingness to respond to my questions. The following questions are not meant for testing your knowledge. The aim of this study is to analyze factors affecting sustainability of Kaizen in Wolkite Poly-Technique College. The attached questionnaire is also designed to assess the factors affecting sustainability of kaizen in Wolkite Poly-technique College. I would appreciate if you could help me by responding to the attached questionnaire. It has two parts it may take 10 to 15 minutes to complete. For this purpose data will be collected through questionnaire, interview and observation checklist. The survey data will be analyzed on a collective basis hence confidentiality is maintained. The information you share with me will be secured with the at most confidentiality and your personal identity will be kept anonymous. There are no unknown risks and discomfort associated with this study. The expected benefits associated with this study are the end results that may be helpful to improve sustainability of kaizen events in the existing training system. I would be happy to share the findings with you after the study is completed or even while in process. I assure you again, your names will not be associated with the research findings in any way, and your identity as a participant will be known only to me.

Thus, your genuine cooperation in providing relevant and truthful information is highly essential for the success of the study. Hence, please be honest and genuine when responding to each question.

Thank You in advance for your assistance.

Instruction: The followings are items some issues related to sustain kaizen in your institution. Please select the response that BEST describes your opinion of the extent to which each of the following activities has occurred in your College. Indicate your response by marking (✓) against each item from the given rating scales.

5=strongly agree 4=agree 3=undecided 2=disagree 1=strongly disagree

	Items factors affecting sustainability of kaizen event activities in your College	ratings scales				
		1	2	3	4	5
1.	There is clear goal to sustain kaizen in the College					
2.	Task complexity negatively impact sustainability of improvement in the College					
3.	There is diversity of functional expertise within the Kaizen event team (QCC)					
4.	There is support that senior leadership provided to the team, including materials and supplies, equipment, and assistance from organizational members.					
5.	There is communication across work areas (departments) to support continued improvement after a Kaizen event.					
6.	Work area trainers are able to share experiences and lessons learned with peers.					
7.	Trainers try out new things by applying them in practice (Active experimentation with new ideas)					
8.	There is collective responsibility of a group of work area among trainers.					
9.	There is Work area trainers and management turnover.					
10.	Management actively participates in kaizen event.					
11.	Trainers understand what continuous improvement (kaizen) is.					
12.	Trainers understand how continuous improvement can be applied to					
13.	To institutionalizing change every member of the organization completing the Plan-Do-Check-Act cycle.					
14.	Management's support of work area employees and Kaizen event team (QCC) members include Rewarding and recognition of employees					
15.	The work area employees dislike the change					
16.	The work area employees 'belief in the value and need of the change mechanism.					
17.	Management blame or negativity when team goals are not achieved.					
18.	There is progress or follow-up and Meetings with Kaizen coordinator or facilitator					
19.	Conducting regular audits on changes made kaizen implementation by kaizen coordinator.					
20.	There is meetings with management about kaizen					
21.	Employee freely shares information with one another.					

Appendix (B)

Interview Guide to Core and supportive administrators of the college

Dear Respondent:

The objective of this interview is to collect data concerning factor affecting sustainability of to kaizen implementation in Wolkite Poly-technique College. Since your responses determine the quality of research result, you are kindly required to give genuine complete responses to the question raised.

1. Would you tell me your educational and leadership experience relevant to this position?
 - a. Your Qualification
 - b. Experience in this position
 - c. Work experience as a whole
2. Do you have taken short-term training or long term training on implementing Kaizen?
3. Do you think that the training you have attended enable you manage the implementation of Kaizen strategy in your organization?
4. How do you describe the implementation and the success of kaizen in your colleges?
5. Are there any factors affecting sustainability of kaizen in your colleges?
6. How the factors affecting sustainability of kaizen faced as an administrator or manager in your institution?
7. Do you think that the all a sense of accountability for the work they do in sustaining kaizen?
8. What looks like conducting regular audits on changes made kaizen implementation by kaizen coordinator and top management to sustain kaizen?
9. Do you have a sustainable system of rewarding or recognizing to team members who commit to sustain kaizen in your institution?
10. What solutions do you propose to be taken to alleviate those factors affecting sustainability of kaizen in your institution?

Thank you for your participation!

You have been very helpful.

Appendix (C)

**Table 9 Observation Checklist on the availability system to sustain kaizen implementation
in Wolkite poly-Technique College**

5=excessively available 4=sufficiently available 3= moderately available
2= Available 1= Unavailable

Nº	Observation criteria on the availability system to sustain kaizen implementation	ratings scales				
		1	2	3	4	5
1.	There is clear goal to sustain kaizen in the College					
2.	Task complexity negatively impact sustainability of improvement in the College					
3.	There is support that senior leadership provided to the team, including materials and supplies, equipment, and assistance from organizational members.					
4.	There is communication across work areas (departments) to support continued improvement after a Kaizen event.					
5.	Work area trainers are able to share experiences and lessons learned with peers.					
6.	Trainers try out new things by applying them in practice (Active experimentation with new ideas)					
7.	There is meetings with management about kaizen					
8.	Management actively participates in kaizen event.					
9.	To institutionalizing change every member of the organization completing the Plan-Do-Check-Act cycle.					
10.	Management's support of work area employees and Kaizen event team (QCC) members include Rewarding and recognition of employees					
11.	There is progress or follow-up and Meetings with Kaizen coordinator or facilitator					
12.	Conducting regular audits on changes made kaizen implementation by kaizen coordinator					

Appendix D Views of respondents on knowhow of kaizen, its benefit and if any factors affecting sustainability of kaizen in the College core and supportive administrator

No	Item asked for core and supportive staff	Response										
		Qualification			Work experience this position				Whole work experience			
		A	B	C	1-5	6-10	11-15	>16	1-5	6-10	11-15	>16
1.	Would you tell me your educational and leadership experience relevant to this position? Your Qualification, Experience in this position Work experience as a whole	3	10	3	9	3	1	3	1	6	4	5
2	Do you have taken short-term training or long term training on implementing Kaizen?											
3	Do you think that the training you have attended enable you manage the implementation of Kaizen strategy in your organization?											
5	Are there any factors affecting sustainability of kaizen in your colleges?											
7	Do you think that the all employee a sense of accountability for the work they do in sustaining kaizen?											
8	Do you think there is a regular audit in your College on changes made kaizen implementation by kaizen coordinator and top management to sustain kaizen?											
9	Do think there is a sustainable system of rewarding or recognizing to team members who commit to sustain kaizen in your institution?											

Appendix (E) Views of respondent on knowhow of kaizen, its benefit and factors affecting sustainability of kaizen in the College.

No	Item asked for core and supportive staff	Response
4	How do you describe the implementation and the success of kaizen in your colleges?	• Create conducive Working area • Satisfy workers and customers • Reduce waste, time, energy, money • Increase productivity • Easy accessibility of material ,tools, machines, files • Utilize resource effectively • Attitudinal change • Facilitate outcome training • Enhance technology transfer • Help to create competent trainee's • Model for other institute
6	How the factors affecting sustainability of kaizen faced in you College?	• Belief or commitment of employee not in the same level • Lack of training • Employee busy on temporary work • Workload of employee • Building are not appropriate • Financial challenge • Attitudinal problem • Lack of awareness • Lack of well trained number of staffs • Less feeling of responsibility • Lack management participation and follow-up • Link kaizen activity with way of getting income • All staff not sense of accountability • No PDAC in the college • To think kaizen is only sanitation • Need fast change • Not apply techniques to sustain kaizen
10	What solutions do you propose to be taken to alleviate those factors affecting sustainability of kaizen in your institution?	• Management should lead and participate • Must lead by dean • Preparing awareness tanning (to make employee committed, and to bring attitudinal change) • Giving emphasis to kaizen activity • Assigning responsible persons and appropriate Budget • Creating Rewarding system • Setting auditing system • Continuous Capacity building • Establish its own office • To make kaizen daily activity

Table 11 Observation Checklist on the availability of system to sustain kaizen in Wolkite poly-Technique College

N ^o	Observation criteria on the availability system to sustain kaizen implementation.
1.	There is clear goal to sustain kaizen in the College
2.	Task complexity negatively impact sustainability of improvement in the College
3.	There is support that senior leadership provided to the team, including materials and supplies, equipment, and assistance from organizational members.
4.	There is communication across work areas (departments) to support continued improvement after a Kaizen event.
5.	Work area trainers are able to share experiences and lessons learned with peers.
6.	Trainers try out new things by applying them in practice (Active experimentation with new ideas)
7.	There is meetings with management about kaizen
8.	Management actively participates in kaizen event.
9.	To institutionalizing change every member of the organization completing the Plan-Do-Check-Act cycle.
10.	Management's support of work area employees and Kaizen event team (QCC) members include Rewarding and recognition of employees
11.	There is progress or follow-up and Meetings with Kaizen coordinator or facilitator
12.	Conducting regular audits on changes made kaizen implementation by kaizen coordinator

Appendix F Table 12

በ2006ዓም በወልቂጤ ፖሊ-ቴክኒክ ኮሌጅ ከካይዘን ትግበራ በኋላ የተገኘ በቁጥር የሚለካ ውጤትና የለውጥ ማሳያ ቅፅ

ተ.ቁ	የማሻሻያ/ የለውጥ አመላካች	ከካይዘን በፊት	ኢላማ	ከካይዘን በኋላ	ለውጥ በ%	ለውጡ በገንዘብ ሲሰላ
1	የ5 "ማ" አመላካች (5S Indicators)					
	1.1 አማካይ የ5 "ማ" መመዘኛ ቅጽ ነጥብ ውጤት(%)	35%	100%	95%	60	
	1.2 ከአላስፈላጊ ነገሮች ተሽጦ የተገኘ ገቢ (በብር)	3000	33,000*	31,000	90.9	31000
	1.3 እንደገና ጥቅም ላይ የዋለ ቁስ (ዕቃ) ብዛት					
	1.4 ተጠግነው ሥራ ላይ የዋሉ ማሽኖች ብዛት	10,000	125,200*	120,000	95.84	120,000
	1.5 የተገኘ ነጻ የመሥሪያ ቦታ(ሜ ²)	-	600ሜ ² *	532ሜ ²	88.67	532,000
	1.6 በሥራ ላይ የደረሰ አደጋ ብዛት	20	1*	1	100	50,000
2	የብክነትአመላካች (Muda Elimination Indicators)					
	2.1 የመራጃዎችና የመገልገያ መሣሪያዎች በፍለጋ የሚባከን ጊዜ(Tools& quipment)	10ደቂቃ(አማካይ)	30ሰከንድ	30ሰከንድ	99.9	162, 000
	2.3 ጥሬ ዕቃ አጠቃቀም የሌሎች ግብዓቶች አጠቃቀም ብክነት	20%(waste)*	2%	2%(waste)	100	220,000
	2.5 የማጓጓዣ ርቀት					
	2.6 እንቅስቃሴ በሜትር	1620m/ባቀን*	92m/ባቀን	89m/ባቀን	96.7	163 000
	2.9 የተበላሸ የንብረት ክምችት መጠን	200(በቁጥር)	4	3 በቁጥር)	75	175.000
	ምርታማነት(Productivity indicators)					
	3.2 ማሸን ተበላሽቶ የሚቆመበት ጊዜ	90ቀን*	2ቀን	2 ቀን	100	238,000
	3.3 የማሸን ብልሽት ድግግሞሽ ብዛት	3/year(አንድ ማሸን)	1	1/year(አንድ ማሸን)	100	432000
	የጥራትአመላካች (Quality Indicators)					
	4.3 የደንበኛ ቅሬታ ብዛት	45/በዓመት	10/በዓመት	11//በዓመት	97	በጣም ከፍተኛ የደምበኛ አርካታ
	ሌሎችአመላካች (Other Indicators)					
	5.1 የተገኙ አዳዲስ ፈጠራዎች/ማሻሻያዎች ብዛት	7	18	18	100	1 500 000

- ☛ ምቹ የስራ ቦታ በመፈጠሩ በተገኘ አርካታ የስራ መነሳሳት በመፈጠሩ ከመደበኛ የስራ ሰዓት ወጪ በመስራት 172,000 ብር
- ☛ በከየዘን ትግበራ ወቅት ተደብቀው የነበሩና የተገኙ ቁሶች 75 ,000 ብር
- ☛ የሲኦሊ ምዘና ውጤት 87.2
- ☛ የውስጥ ገቢ ማሳደግ ከ 1 ሚሊየን ወደ 1.75 ሚሊየን ከፍ ብሏል፡፡
- ☛ በጥቅሉ ~ 3 842 100 Birr