Federal Republic of Ethiopia
Ethiopian KAIZEN Institute (EKI)

THE PROJECT FOR CAPACITY BUILDING FOR DISSEMINATION OF QUALITY AND PRODUCTIVITY IMPROVEMENT (KAIZEN) IN THE FEDERAL REPUBLIC OF ETHIOPIA

COMPLETION REPORT

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JAPAN INTERNATIONAL COOPERATION AGENCY

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The Project for Capacity Building for Dissemination of Quality and Productivity Improvement (KAIZEN)

< Completion Report >

CONTENTS

1. Outline of the Project 1
   1.1 Background of the Project 1
   1.2 Purpose of the Project 2
   1.3 Project Period, Target Areas, and Implementing and Related Agencies 2
   1.4 Basic Work Implementation Policies 3
   1.5 Composition of the Counterparts (C/Ps) 4
2. List of Products of the Project 5
   2.1 Products Prepared 5
   2.2 State of Achievement of Project Purpose and Outputs Listed in PDM 5
   2.3 State of Achievement of Recommendations Made at the Time of Mid-Term Evaluation and Final Evaluation 10
3. Implementation schedule of Activities (Achievements) 21
4. Results of Input 22
   4.1 Results of the Dispatch of Experts 22
   4.2 Assigned Fields for Individual Experts 23
   4.3 Results of Counterpart (C/P) Training (In Japan and Third Country) 25
   4.4 Procurement of Equipment 27
   4.5 Actual Cost of General Administration 27
5. Reporting on Technology (Skill) Transfer Activities 27
   5.1 Activities Related to Output 1 27
      5.1.1 Formulation of Long-Term Plan for Dissemination of KAIZEN 27
      5.1.2 Strengthening of Organizational Structure of EKI for Dissemination of KAIZEN 32
      5.1.3 Strengthening of Collaboration with Ethiopian Organizations 34
      5.1.4 Formulation of Publicity and Information Service Strategy and Implementation of Seminars and PR Activities 37
      5.1.5 Support for Strengthening of the Capacity to Provide Higher Education 39
   5.2 Activities Related to Output 2 45
   5.3 Activities Related to Output 3 57
6. Outline and Achievements of Subcontracted Work 67
   6.1 Impact Survey 67
      6.1.1 Survey Method 67
      6.1.2 Selection Method of Target Enterprises for Impact Survey 68
      6.1.3 Interview Survey 69

6.1.4 Survey Schedule 70
6.1.5 Survey Findings 70
7. Innovative Project Management and Lessons Learned 72
8. History of PDM Revisions 78
9. Records of meeting of the JCC 83
10. Recommendations 84

Appendices

Appendix 1: List of Ethiopian KAIZEN Institute Staff A-1
Appendix 2: Detailed State of Achievement by Indicators Listed in PDM A-4
Appendix 3: State of Achievement of the Planned Activities Listed in the PDM A-10
Appendix 4: Agreement for Handing Over of Equipment ① A-12
Appendix 5: Agreement for Handing Over of Equipment ② A-14
Appendix 6: Totaled Results of Questionnaires to MSc Program Participants A-17
Appendix 7: Basic Information on Higher Education in Ethiopia (Abstract) A-21
Appendix 8: List of Host Enterprises for ICT for EKI Consultants A-23
Appendix 9: List of Host Enterprises for ICT for TTTs A-30
Appendix 10: Questionnaire for the Impact Survey A-46
Appendix 11: Final Report for the Impact Survey A-95
Appendix 12: PDM (Vers. Draft 1, 1.0 and 2.0) A-168
Appendix 13: Minutes of Meeting (M/M) of the 1st to 7th Joint Coordination Committee (JCC) Meeting A-174

LIST OF FIGURES AND TABLES

< Figures >

Fig. 1: Organizational Structure of the EKI (as of the end of October 2014) 4
Fig. 2: Factors Affecting the Outcome of the Transfer of KAIZEN Techniques and Theories ... 59
Fig. 3: KAIZEN Competency of TTTs during ICT (5 = Excellent; 1 = Poor) 61
Fig. 4: Introduction of Hypotheses in Consulting 63
Fig. 5: KAIZEN Featured in ICT 64
Fig. 6: Conceptual Diagramme of the Impact Survey 68
Fig. 7: Summary of the Impact Survey Findings 71
Fig. 8: Correspondence between KAIZEN Needs at Enterprises and KAIZEN Techniques/Consulting 95

< Tables >

Table 1: Comparison of TTTs Training Under the Project and TTTs Training by the EKI 19
Table 2: Work Assignment for Each Expert 23
Table 3: Strategic Framework of Ethiopia KAIZEN (Version 1) 31
Table 4: Ethiopian Organizations Contacted during the Project Period 35
Table 5: Questionnaire Survey Results for KAIZEN Seminars in Local Cities (5 Point System) 38
Table 6: Teaching Schedule for the First Semester 41
Table 7: Teaching Schedule for the Second Semester Based on Recommendations by Professor Osada 41
Table 8: Components of CRT 46
Table 9: Advancement of Theoretical Understanding among Participants to the 1st Batch CRT through 3rd Batch CRT 47
Table 10: Number of Host Enterprises for ICT and Trainees and Their Composition 48
Table 11: Comparison between Self-Evaluation Results by Trainees and Those by Experts 49
Table 12: Comparison of Problem Solving Capability Level of EKI Consultants Before and After Their Training 50
Table 13: Outline of Follow-Up Survey Results for Host Enterprises of ICT in the Past 55
Table 14: Four Types of Transfer of Techniques Based on Differences in Terms of Targets and Contents 57
Table 15: CRT Curriculum for Training of TTTs 58
Table 16: Post-CRT Test Results by Batch 59
Table 17: Number of Enterprises Surveyed 69
Table 18: Data Collection Schedule for Each Batch of LMEs and MSEs 70
Table 19: History of PDM Revisions 1 79
Table 20: History of PDM Revisions 2 82
Table 21: Important Points, etc. for Advancement of KAIZEN Activities Based on the Strategic Framework 90

ABBREVIATIONS

Abbreviation	Full Term
AA	Addis Ababa
AACCSA	Addis Ababa Chamber of Commerce and Sectoral Associations
AA-MSEDB	Addis Ababa Micro Small Enterprise Development Bureau
AAPIC	Addis Ababa Productivity Improvement Center
AAU	Addis Ababa University
AUC	Africa Union Commission
BSC	Balanced Score card
CRC	Cluster Resource Center
CFT	Cross Functional Team
C/P	Counterpart
CRT	Class Room Training
DG	Director General
DP	Discussion Paper
ECCSA	Ethiopian Chamber of Commerce and Sectoral Associations
ECSU	Ethiopian Civil Service University
EDRI	Ethiopian Development Research Institute
EIA	Ethiopia Investment Agency
EiT-M	Ethiopian Institute of Technology-Mekelle (University of Mekelle)
EKI	Ethiopian KAIZEN Institute
EMI	Ethiopian Management Institute
ESA	Ethiopian Standard Agency
FeMSEDA	Federal MSE Development Agency
FeTA	Federal TVET Agency
GIZ	German Development Cooperation
GRIPS	National Graduate Institute for Policy Studies
GTP-2	2nd Growth Transformation Plan
ICT	In Company Training
IDIs	Industrial Development Institutes
IE	Industrial Engineering
JCC	Joint Coordinating Committee
JDS	Japan Development Service Co., Ltd.
JET	Japanese Expert Team
JICA	Japan International Cooperation Agency
KU	KAIZEN Unit
KPT	KAIZEN Promotion Team
LIDI	Leather Industrial Development Institute
LMEs	Large and Medium Enterprises
MIDI	Metal Industrial Development Institute
MoE	Ministry of Education
MoFED	Ministry of Finance and Economic Development
MoI	Ministry of Industry
MoST	Ministry of Science and Technology
MoUDC	Ministry of Urban Development and Construction
MSEs	Micro and Small Enterprises
NKC	National KAIZEN Council
OJT	On the Job Training
PC	Planning Commission
PDM	Project Design Matrix
PMO	Prime Minister's Office
PTS	Predetermined Time Standard System
PPESA	Privatization and Public Enterprises Supervising Agency
QC	Quality Control
QCC	Quality Control Circle

Abbreviation	Full Term
ReMSEDAs	Regional MSE Development Agencies
ReTAs	Regional TVET Agencies
SMED	Single Minute Exchange of Die
SOP	Standard Operating Procedure
TICAD V	Tokyo International Conference on African Development V
TIDI	Textile Industrial Development Institute
TPM	Total Productive Maintenance
TQM	Total Quality Management
TTs	Trainers' Trainers
TTTs	TVET Trainers' Trainers
TVET	Technical Vocational Education and Training
TVETI	Technical Vocational Education and Training Institute
UNIDO	United Nations Industrial Development Organization
VE	Value Engineering
WP	Work Plan
WG	Working Group

Nominal Designations of EKI Staff in This Report and Their Descriptions

	Nominal Designation	Description
1	KAIZEN Unit (KU) members	Meaning the eight candidate consultants who underwent training as members of the EKI's KAIZEN Unit during the previous Quality and Productivity Improvement (KAIZEN) Project (October, 2009 - May, 2011)
2	EKI consultants	Uses as a collective term for "KU members" and those consultants (candidates) who belong to one of the R&D Directorate, Manufacturing Deputy Directorate and Capacity Building Deputy Directorate among the new EKI staff members newly recruited in early May, 2012; within the EKI, in-house consultants are classified into five ranks, i.e. lead consultant, senior consultant, consultant, assistant consultant and junior consultant in the descending order.
3	EKI administrative staff (administrative and publicity offices)	Meaning those EKI staff members who were recruited in early May, 2012 to work for one of the administrative and publicity offices (Director General Office, Corporate Communication Directorate, Finance and Supply Directorate, Planning and Information Directorate and Human Resources Directorate).

Types of Training and Their Descriptions

	Type of Training	Description
1	EKI Consultant Training	Collective term for training (CRT and ICT) featuring EKI consultants to be responsible for providing KAIZEN guidance for LMEs
2	EKI Consultant CRT	CRT featuring EKI consultants to be responsible for providing KAIZEN guidance for LMEs
3	EKI Consultant ICT	ICT featuring EKI consultants to be responsible for providing KAIZEN guidance for LMEs
4	TTTs Training	Collective term for training (CRT and ICT) featuring EKI consultants and TTTs, both of whom are responsible for providing KAIZEN guidance for MSEs
5	TTTs CRT	CRT featuring EKI consultants and TTTs, both of whom are responsible for providing KAIZEN guidance for MSEs
6	TTTs ICT	ICT featuring EKI consultants and TTTs, both of whom are responsible for providing KAIZEN guidance for MSEs
7	EKI Consultant Development	Collective term for activities to transfer KAIZEN techniques to be conducted for EKI consultants by means of "EKI consultant training" and "TTTs training"

Roles of EKI Consultants and Their Nominal Designations in the Training of the Project.

	Nominal Designation	Description
1	Coordinator	Meaning an EKI consultant who can independently conduct the consulting work while managing training and providing guidance for trainers.
2	Trainer	Meaning an EKI consultant who can independently conduct the basics of the consulting work and who is learning consultant work through his guidance for trainees as part of the overall training operation under the supervision of a Japanese expert and a coordinator.
3	Trainee	Meaning an EKI consultant participating in the CRT and ICT as a trainee.

1. Outline of the Project

1.1 Background of the Project

Ethiopia has enjoyed a high annual GDP growth rate in the range of 9% to 13% in recent years. However, more detailed analysis of the GDP growth by sector reveals average annual growth of the secondary industry of around 10% and the GDP share of the manufacturing industry of around 5% is particularly low even when compared with other countries with a similar income level. This situation has created a bottleneck for sustainable economic growth as well as poverty reduction in Ethiopia. As suggested by the facts that informal micro and small enterprises (MSEs) dominate the private sector and public enterprises account for some 40% of the total added value produced by the manufacturing industry, the slow development of the private sector is a long-standing issue in Ethiopia. The low level of product quality as well as productivity among private enterprises in particular is one causative factor of barriers to export promotion, import substitution and domestic as well as inward investment. It is, therefore, essential to strengthen the competitiveness through the development of the private sector, especially improvement of the product quality and productivity of the manufacturing industry which has been struggling to grow in order to achieve sustainable economic growth.

Against this background, JICA made a presentation on the “Master Plan Study for Improvement of Quality and Productivity in Tunisia” and “Development Experiences of Asia” at a meeting of the Policy Dialogue Initiative Africa held in Addis Ababa in 2008 and late Prime Minister Meles of Ethiopia showed strong interest. This interest was followed by a formal request by the Government of Ethiopia to the Government of Japan to provide cooperation regarding KAIZEN as a philosophy and techniques for Japanese style quality and productivity improvement based on the precedence in Tunisia. In response, JICA implemented development study type technical cooperation which was entitled “Study on a Project to Improve Quality and Productivity” (hereinafter referred to as the “Pilot Project”) from October, 2009 to May, 2011. In this Pilot Project, the KAIZEN Unit (KU) was set up within the Ministry of Industry (MoI) as the counterpart organization (C/P) and the Unit head and another eight members of the KU were selected from within the MoI and its subordinate organizations. These KU members acquired basic knowledge and skills to improve quality and productivity (KAIZEN) through OJT on KAIZEN guidance at 28 pilot enterprises (large enterprises). The Pilot Project successfully demonstrated that the KAIZEN approach is an effective tool to vitalise the private sector in Ethiopia and a plan to disseminate KAIZEN was formulated. The results of the Pilot Project were reported to Prime Minister Meles who subsequently requested the Government of Japan's provision of continual assistance to materialise the said plan.

In June, 2011 against the backdrop of growing anticipation of high level quality and productivity improvement (KAIZEN), the Government of Ethiopia adopted a policy to upgrade the KU as a permanent agency as the Ethiopian KAIZEN Institute (EKI) under the jurisdiction of the MoI by

October, 2011[1] with a view to the nationwide dissemination of KAIZEN. However, as only nine KU members were trained in the Pilot Project, there is hardly sufficient manpower for the nationwide dissemination of KAIZEN. Moreover, while these nine KU members have mastered basic knowledge and practical guidance skills regarding KAIZEN, they still need to acquire more advanced knowledge (including teaching skills to develop human resources), technical skills and practical experience. Accordingly, the development of capable human resources and organizational management systems with the EKI functioning as the core organization is essential for the nationwide dissemination of KAIZEN.

Against this background, a request for the Project for Capacity Building for Dissemination of Quality and Productivity Improvement (KAIZEN) was made by the Government of Ethiopia to the Government of Japan for the purpose of developing a system for the continual dissemination of KAIZEN to private enterprises in Ethiopia and this request was accepted by the Government of Japan.

1.2 Purpose of the Project

The Project on Capacity Building for Dissemination of Quality and Productivity Improvement (KAIZEN) in the Federal Democratic Republic of Ethiopia (hereinafter referred to as "the Project") has the following Overall Goal, Project Purpose and Outputs.

<Overall Goal>

An increased number of private enterprises will implement quality and productivity improvement (KAIZEN).

<Project Purpose>

The system is established to disseminate quality and productivity improvement (KAIZEN) to private enterprises in a sustainable manner.

<Outputs>

1. The institutional and organizational foundation of Ethiopian KAIZEN Institute (EKI) is established as the core and lead organization for the dissemination of quality and productivity improvement (KAIZEN).
2. The system of human resource development for dissemination of quality and productivity improvement (KAIZEN) to large and medium enterprises (LMEs) is functionalized in EKI.
3. The model system for EKI to foster TVET Trainers' Trainers (TTTs) is developed for quality and productivity improvement (KAIZEN) for micro and small enterprises (MSEs).

1.3 Project Period, Target Areas, and Implementing and Related Agencies

- Project period:

  November 2011 - January 2014 (1st Phase)

[1] The establishment of the EKI was officially proclaimed in the Federal Gazette on 28th October, 2011.

March 2014 - December 2014 (2nd Phase)

- Target areas:

  All over Ethiopia (the major part of the activities for LMEs and MSEs are to be undertaken in Addis Ababa and its vicinity.

- Base of activities:

  Addis Ababa (EKI)

- Implementing agency on the Ethiopian side:

  Ethiopian KAIZEN Institute (EKI)

- Related agencies on the Ethiopian side:

  Ministry of Industry (MoI)
  Ministry of Urban Development and Construction (MoUDC)
  - Federal MSE Development Agency (FeMSEDA)
  - Regional MSE Development Agencies (ReMSEDAs)

  Ministry of Education (MoE)
  - Federal TVET Agency (FeTA)
  - Regional TVET Agencies (ReTAs)
  - Technical Vocational Education and Training Institute (TVETI)

1.4 Basic Work Implementation Policies

This project team is carrying out services under five items of the "Overall Basic Policies" and five items of the "Basic Technical Policies" described below.

Overall Basic Policies

(1) Emphasis on the support of the JICA Expert Team as required
(2) Preparation and implementation of feasible plans and recommendations
(3) Joint operation by the Ethiopian side and Japanese side based on the R/D, M/M and PDM
(4) Utilisation of the outputs of the Phase 1 Project and other similar JICA projects
(5) Strict safety control for members of the Project Team

Basic Technical Policies

(1) Development of a common definition of KAIZEN (improvement)
(2) Application of KAIZEN technologies with focus on solving the problems of enterprises
(3) Emphasis on the development of the KAIZEN capacity to conduct continuous improvements in the workplace
(4) Training with focus on developing KAIZEN practical ability
(5) Implementation of in-company training with priority given to "KIZUKI" (awakening)

1.5 Composition of the Counterparts (C/Ps)

As of the end of October 2014, 91 staff is enrolled in the EKI. The organization chart of the EKI is shown in the figure below. (See Appendix 1: "List of Ethiopian KAIZEN Institute Staff")

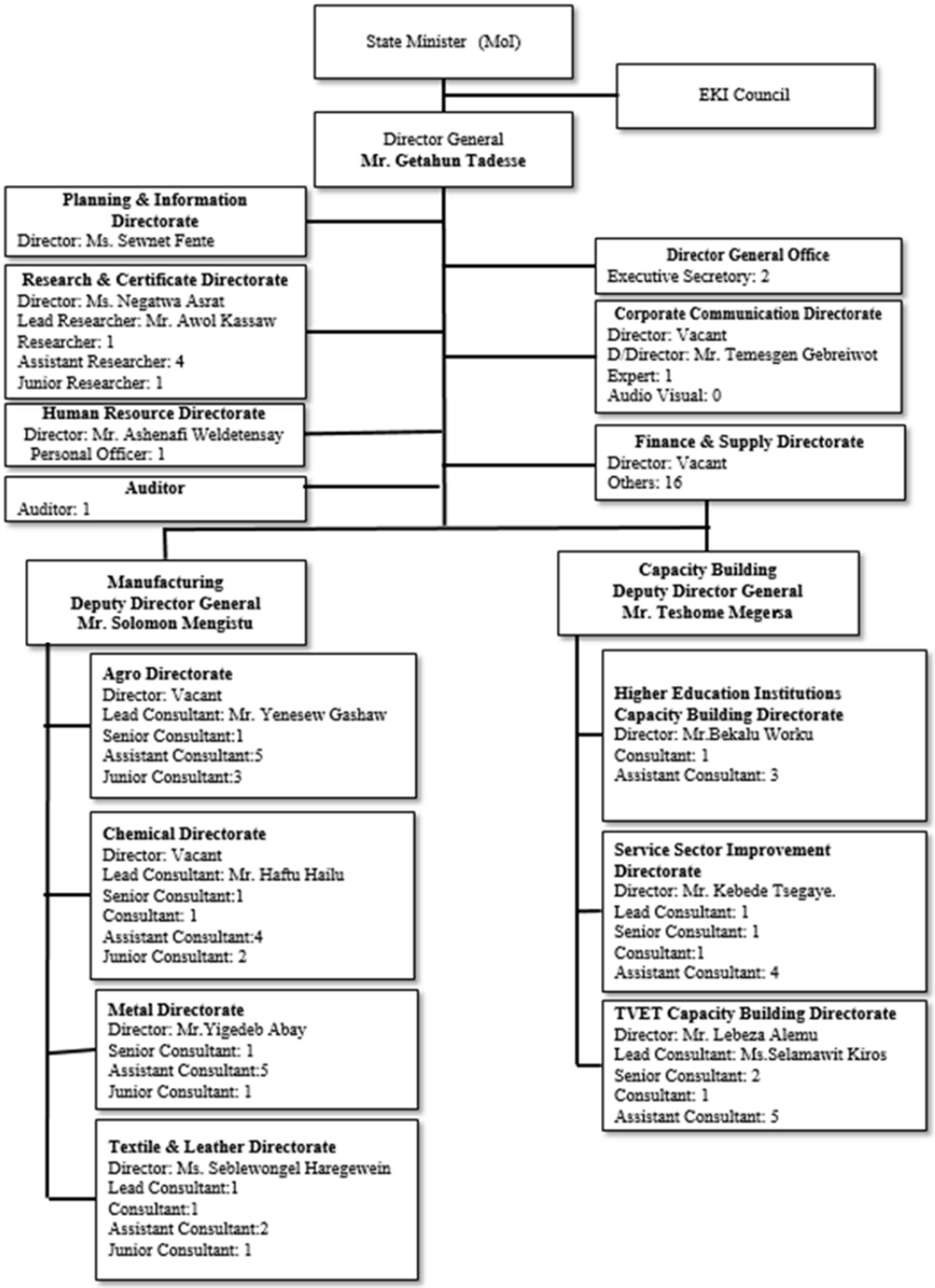


Fig. 1: Organizational Structure of the EKI (as of the end of October 2014)

2. List of Products of the Project

2.1 Products Prepared

The reports and other products prepared during the project period are listed below.

(1) Reports

- Work Plan (Phase 1 and Phase 2)
- Progress Reports (First through Fifth)
- Completion Report (present Report)
- Reports on Training in Japan (First and Second)
- Reports on Third Country Training in Malaysia
- Report on the Side Event Organized for the TICAD V Ministerial Preparatory Meeting
- Final Report for the Impact Survey

(2) Technical Cooperation Product

- KAIZEN Manual (Theory Part and Application Part)

2.2 State of Achievement of Project Purpose and Outputs Listed in PDM

The state of achievement of the project purpose and outputs listed in the PDM (Ver. 2.0) is outlined below.

More detailed analysis results of the state of achievement are described in "Appendix 2: Detailed State of Achievement by Indicators Listed in PDM" while the state of achievement of the planned activities listed in the PDM is described in "Appendix 3: State of Achievement of the Planned Activities Listed in the PDM".

(1) Project Purpose

"The system is established to disseminate quality and productivity improvement (KAIZEN) to private enterprises in a sustainable manner."

During the project period, a system capable of disseminate KAIZEN to LMEs in a sustainable manner was established through the development of the three sub-systems listed below.

① Sub-system to train EKI consultants internally at the EKI to provide KAIZEN guidance for LMEs
② Sub-system to train trainers of EKI consultants who provide KAIZEN guidance for enterprises
③ Sub-system for EKI consultants to disseminate KAIZEN to enterprises

During the process of establishing the system in question, 57 EKI consultants were trained and KAIZEN was introduced to 51 LMEs, enabling the EKI to use the system to provide its own KAIZEN guidance primarily featuring basic KAIZEN systems for sugar plants and other state enterprises, a national project for the construction of low cost housing and private enterprises.

Meanwhile, the development of the following four sub-systems firmly established the system to disseminate KAIZEN to MSEs in a sustainable manner.

① Sub-system to train TTTs by EKI trainers
② Sub-system to train EKI trainers
③ Sub-system to implement the KAIZEN training of TTTs by trained TTTs
④ Sub-system to disseminate KAIZEN by trained TTTs to enterprises

During the process of establishing the system in question, 6 EKI trainers and 131 TTTs were trained and KAIZEN was introduced to 129 MSEs. The EKI used the system to implement its own training of local TVETIs, completing the training of 175 trainees and introducing KAIZEN to 69 MSEs.

With the strong commitment of the Government of Ethiopia, it is scheduled that KAIZEN will be clearly indicated as one of the pillars to strengthen the industrial competitiveness of Ethiopia in the forthcoming GTP-2.

Based on the above, it is safe to say that a system to sustainably disseminate basic KAIZEN to private enterprises in Ethiopia with the EKI acting as the core organization has been established and that the project purpose has been achieved.

1) 60 qualified professionally trained EKI Consultants

Through the first to fourth batch EKI consultant training sessions, 49 professional trained KAIZEN consultants were products. The number of these consultants will increase to 57 when the eight trainees currently undergoing the fifth batch training complete their training.

2) 170 qualified professionally trained TTTs

Through the first to eighth batch TTT training sessions, 131 professionally trained TTTs were produced. The number of these TTTs will increase to 306 when those trained by the EKI at local TVETIs are included.

3) The system to disseminate quality and productivity improvement (KAIZEN) is clearly described in long-term KAIZEN dissemination plan

Although the details of the forthcoming GTP-2 have not yet been published, a reasonable assumption based on remarks made by the Prime Minister and relevant ministers is that strengthening of the industrial competitiveness of Ethiopia (especially the strengthening of export industries and import substitution industries) will be one of the main pillars. It is planned that the “dissemination of KAIZEN” will be referred to as an important measure to achieve such strengthened industrial competitiveness. In line with such a plan, the EKI has prepared a draft long-term plan for KAIZEN dissemination (2015/16 ~ 2019/20) which it submitted to the MoI in

August, 2014. The MoI then forwarded this plan to the National KAIZEN Council (NKC) for discussion. While the basic system for KAIZEN dissemination has been established through activities under the Project, the long-term plan clearly indicates the need for the further development of the KAIZEN dissemination capability and the firm establishment of a viable KAIZEN dissemination system. It is anticipated that the long-term plan will be examined again at the second meeting of the NKC scheduled to be held in January, 2015 for its subsequent submission to the National Planning Commission (NPC) which is currently preparing the GTP-2.

4) 75% of enterprises participated in in-company trainings answer the results of consulting services as satisfactory

Some 94% of the LMEs involved in the first through fourth batch ICT for EKI consultants replied that they were satisfied with the ICT in answer to an either-or question. Meanwhile, some 96% of the MSEs involved in the ICT for TTTs replied that they were satisfied with the ICT when those who gave the ICT a 4 or a 5 in a 5 point evaluation were groups as enterprises satisfied with the ICT.

5) Accumulation of good practices of participating enterprises as model cases

Using those host enterprises for ICT with noticeably positive KAIZEN results, the standard operating procedure (SOP) applicable to enterprises in general and an example of preventive maintenance employed by a leather manufacturer were identified and incorporated in the KAIZEN manual.

(2) Outputs

1) Output 1

"The institutional and organisational foundation of Ethiopian KAIZEN Institute (EKI) is established as the core and lead organisation for the dissemination of quality and productivity improvement (KAIZEN)."

With the securing of the strong commitment of the Government of Ethiopia, the EKI has established the foundations for intensive KAIZEN dissemination in its short history of less than three years since its foundation. The concept of KAIZEN has been widely spread among people through publicity activities using seminars and mass media and an inter-agency collaboration system is being developed through the introduction of KAIZEN-oriented institutions by the EKI in major local cities. Even though the EKI has room for the further strengthening of its organizational management capability, the basic organizational structure of the EKI has been firmly established, successfully achieving planned Output 1.

1-1. Short- and long-term plans for KAIZEN dissemination in place.

The GTP-2 plans to identify KAIZEN dissemination as one of the main pillars for the strengthening of the industrial competitiveness of Ethiopia. In line with this idea, the EKI

has prepared a draft long-term plan for KAIZEN dissemination with the professional input of JET members and submitted this plan to the MoI in August, 2014. The MoI subsequently forwarded the plan to the NKC to review its contents. This draft plan will be submitted to the NPC after further discussion at the NPC and will be incorporated in the GTP-2 to be finalised by the NPC.

As far as the short-term plan for the EKI is concerned, (i) the existing Balanced Scorecard (BSC) prepared by the EKI to cover a period of three years in accordance with the government policy and (ii) the annual plan prepared by the EKI to determine its activities can be considered equivalent to a short-term plan.

1-2. Monitoring and annual evaluation reports on progress of KAIZEN implementation and achievement

The progress and achievements made by the Project and also by the EKI have been monitored and evaluated by the EKI itself based on the BSC and annual plan and the findings have been reported to the stakeholder organizations.

1-3. 600 attendants of KAIZEN seminars

During the project period, a KAIZEN seminar was held seven times in six major cities in Ethiopia, attracting a total of 994 participants. In addition, the Total Quality Management (TQM) and Innovation Management & Strategic Policy Management Seminar delivered by Professor Osada attracted 104 participants.

2) Output 2

"The system of human resource development for dissemination of quality and productivity improvement (KAIZEN) to large and medium enterprises (LMEs) is functionalised in EKI."

The achievements related to Output 2 include (i) the formulation of a training curriculum, training materials, evaluation criteria and methodology to be used to train EKI consultants and (ii) the completion of the development of a system to train EKI consultants in-house and a system to train trainers through OJT following the launch of the in-house EKI consultant training system. These achievements clearly indicate the successful achievement of the planned Output 2.

2-1. EKI Consultants' training curriculum in use

The original training curriculum for EKI consultants was prepared at the start of the first batch training. It was finalised at the end of the fourth batch training, incorporating its re-assessment and verification results in the preceding batches of training. In the fifth batch training, more advanced contents relating to TPM and cost management were added to the curriculum in consideration of the effectiveness of similar training in the next phase of the cooperation.

2-2. Course materials including customised KAIZEN Manuals for EKI Consultants

Based on the results of the training course evaluation conducted at the end of each course and course feedback by the trainees, such training materials as the PowerPoint files, exercise papers and test papers were revised for use in the succeeding training course. In addition, KAIZEN manuals focusing on the problem solving KAIZEN approach reflecting the revised contents of these teaching materials were prepared.

2-3. The criteria and methodology to assess skill level of EKI Consultants in place

The criteria and methodology to assess the skill level of the trainees participating in the EKI consultant training and that of the trainers leading such training have been firmly established.

Comprehensive assessment of the trainees was conducted using the following three methods.

① Written test on the level of technical knowledge before and after the CRT

② Dual assessment of the level of ability to apply the mastered skills before and after the ICT by means of self-declaration by the trainees and assessment by the experts

③ Periodic assessment of the changing level of the ability to apply the mastered skills after the completion of the training using a test paper for self-assessment and assessment criteria

A five point evaluation method using six aspects (understanding of CRT; ability to negotiate for ICT; ability to diagnose enterprises; ability to analyse problems; technical ability to plan solutions; ability to prepare references) was established to evaluate trainers

2-4. 50 LMEs participated in in-company training.

47 LMEs participated in the first through fourth batch ICT for EKI consultants. This number is likely to increase to 51 as four LMEs are currently involved in the fifth batch training.

3) Output 3

"The model system for EKI to foster TVET Trainers' Trainers (TTTs) is developed for quality and productivity improvement (KAIZEN) for micro and small enterprises (MSEs)."

The achievements related to Output 3 include (i) the formulation of a training curriculum, training materials and evaluation criteria and methodology to be used to train TTTs and (ii) the completion of the development of a system to train trainers through OJT following the launch of an in-house trainer training system at the EKI. Moreover, the trainers trained under the Project have been actively utilised as leaders of the KAIZEN training conducted independently from the Project by the EKI at local TVETIs. These achievements clearly indicate the successful achievement of the planned Output 3.

3-1. TTTs' training curriculum in use

From the third batch CRT for TTTs, the JET initiated the transfer of the responsibility for the revision of the TTTs training curriculum to the trainers. Subsequently, the curriculum was revised as required by the trainers and was finalised at the end of the fifth batch TTTs training. From the sixth batch training onwards, the EKI has been conducting this training without the help of the JET based on the contents of the finalised curriculum.

3-2. Course materials including customised KAIZEN Manuals for TTTs

At the end of each batch of training, the training contents were reviewed to make the necessary revisions to the course materials. KAIZEN manuals for TTTs reflecting these revisions were prepared.

3-3. The criteria and methodology to assess skill level of TTTs in place

At the start of the Project, the JET introduced pre-arranged criteria and methodology to assess the skill level of TTTs from the theoretical and practical viewpoints. It was subsequently found that the methodology to make such assessment from the practical viewpoint was hard to apply. As a result, the methodology in question was revised prior to the second batch training. Meanwhile, a five point evaluation system was developed to assess the competence (in terms of the observation skills, analytical skills, creative skills, persuasion skills and leadership) which would be required in a series of processes starting from a fact-finding survey at a target enterprise to the proposal and implementation of a KAIZEN introduction plan. Using this system, the EKI has been evaluating the skill level of trainees without the assistance of the JET since the sixth batch training.

3-4. TTTs' training guideline shared with FeTA and ReTAs

The training guidelines for TTTs are included in the KAIZEN manual and shared with the FeTA and ReTAs since the completion of the manual.

3-5. 170 MSEs participated in in-company training

129 MSEs participated in the first to eighth batch ICT for the training of TTTs. This figure increases to 198 when the 69 MSEs which participated in the training for TTTs at local TVETIs organized independently from the Project by the EKI are added.

2.3 State of Achievement of Recommendations Made at the Time of Mid-Term Evaluation and Final Evaluation

(1) State of Achievement of 10 Recommendations Made by the Mid-Term Evaluation

The Mid-Term Evaluation conducted in July, 2013 produced the 10 recommendations outlined below for the project side.

1) Sharing of information on the EKI's KAIZEN dissemination activities

This recommendation urges (i) the full sharing of information on the EKI's KAIZEN dissemination activities with the JET and stakeholder organizations as such activities have been rapidly expanding and (ii) the implementation of a study to analyse how the dissemination of KAIZEN has been progressing in Ethiopia.

2) Formulation of a long-term plan indicating a road map for the dissemination of KAIZEN

This recommendation urges the EKI to formulate a draft long-term plan with the guidance of the JET within one year for its submission to stakeholder organizations.

3) Monitoring of the activities of former trainee EKI consultants

This recommendation urges the EKI to monitor and verify the understanding and active use of the knowledge and skills learned by the EKI consultants during their training by means of checking the state of their post-training activities.

4) Incorporation of skill evaluation in the EKI consultant evaluation system

This recommendation urges the EKI with the guidance of the JET to introduce an EKI consultant evaluation system using technical indicators instead of the present system where educational career and work experience are the primary factors for evaluation.

5) Introduction of advanced training and follow-up training and support for the creation of a model enterprise(s) for KAIZEN

This recommendation urges the EKI to provide additional guidance for those enterprises which hosted the ICT in the Pilot Project or the Project and which have made a request for follow-up guidance ot the EKI with a view to further strengthening the capability of EKI consultants and contributing to the fostering of model enterprises for KAIZEN.

6) Monitoring of the post-training activities of TTTs and MSEs

This recommendation urges the EKI to (i) obtain a full understanding of the implementation situation of the KAIZEN guidance service for local MSEs and (ii) check the state of the post-training activities of the TTTs and MSEs which were involved in the TTTs training in order to measure the training effects.

7) Utilisation of EKI consultants who have completed the training

This recommendation urges the EKI and JET to fully discuss between themselves how to utilise those EKI consultants who have completed the training with a view to setting out the self-reliant management of the training by the EKI in the post-project period.

8) Solving of problems through coordination between TTT training-related organizations

This recommendation urges (i) the clear distinction of the roles to be played by training-related organizations to solve such problems related to the TTTs training as the balanced selection of MSEs in terms of quality and sector, need to secure a means of transportation and others and (ii) the inclusion of 30 TVET workshops in AA as candidate ICT sites.

9) Contribution to the formulation of policies for the dissemination of KAIZEN

This recommendation urges the EKI to continuously report the state of KAIZEN dissemination and the achievements of the Project to the Prime Minister and relevant cabinet members in Ethiopia through the Industrial Policy Dialogue which commenced in response to a request by late Prime Minister Meles in 2009 with a view to contributing to the formulation of national medium-term and long-term development plans.

10) Modification of the PDM and PO

This recommendation urges the modification of the PDM and PO to reflect the actual state of the Project described above.

The state of achievement of each of the above recommendations is described next.

1)-1 Sharing of Information on the EKI's KAIZEN Dissemination Activities

This recommendation on the sharing of information on the EKI's KAIZEN dissemination activities with project-related organizations has been achieved as such information sharing has become a reality through the activities conducted under the Project as well as those activities initiated independently by the EKI.

Excepting the MoI, the JCC is an effective organ to share project-related information with other stakeholder organizations (MoUDC, MoE, FeMSEDA/ReMSEDAs, FeTA/ReTAs, ECCSA and AACCSA, etc.). The MoUDC and MoE have often failed their representatives at JCC meetings, making information sharing with them difficult. However, their subordinate organizations, such as the FeMSEDA/ReMSEDAs and FeTA/ReTAs have representatives at meetings and there have been opportunities for the EKI to have direct contact with these organizations in relation to their recommendation of TTTs to participate in the TTTs training and the selection of host MSEs for TTTs training. Moreover, since the Mid-Term Evaluation, the EKI has conducted KAIZEN guidance at local TVETIs on its own initiative, strengthening its collaborative link with the FeTA/ReTAs. These facts illustrate the high level of information share in regard to the EKI's KAIZEN dissemination activities.

The EKI has also shared information on its KAIZEN dissemination activities with such organizations as the LIDI, TIDI and MIDI under the jurisdiction of the MoI through its relevant directorates. The said information has also been shared with the EMI, higher education

institutions (AAU and EiT-M) and others in addition to central and local organizations through KAIZEN PR seminars (held in AA and main local cities).

Because of the effective information sharing with stakeholder organizations through the activities under the Project as well as activities initiated independently by the IKI, the establishment of a working group which was recommended by the Mid-Term Evaluation Report was judged to be unnecessary.

1)-2 Study to Analyse How the Dissemination of KAIZEN is Progressing in Ethiopia

This study focused on the progress of KAIZEN dissemination since the commencement of the Project and analysed the state of KAIZEN dissemination in terms of three aspects (implementation system, use of the trained human resources and PR and awareness-raising activities).

① Implementation system

i. Strong commitment of the Government of Ethiopia to the dissemination of KAIZEN

The Project was launched under the strong initiative of late Prime Minister Meles and was inherited by the current Prime Minister with equal enthusiasm, illustrating the strong commitment of the Government of Ethiopia. On 16th September, 2014, the Government of Ethiopia held the first meeting of the NKC. At this meeting, the Prime Minister declared September as “the KAIZEN Month” each year, revealing the government's intention to widely make the people of Ethiopia aware of KAIZEN. In addition, the GTP-2 is understood to emphasise the dissemination of KAIZEN to strengthen the country's industrial competitiveness.

ii. Establishment of a system of collaboration with stakeholder organizations with the EKI acting as the core organization

The EKI has now established a collaborative relationship with not only those organizations involved in the Project but also other organizations, including IDIs under the jurisdiction of the MoI, chambers of commerce and industry and higher education institutions, illustrating the emergence of intra-governmental as well as public-private collaboration systems. In addition, preparatory work is in progress to establish a KAIZEN institute in main local cities, indicating concrete progress of the development of the organizational arrangements for the dissemination of KAIZEN not only in AA but also in local cities.

② Use of trained human resources

i. Establishment of a training system for KAIZEN dissemination and implementation of KAIZEN dissemination activities on the initiative of the EKI with the EKI acting as the core organization

It has been confirmed that the training system established through the EKI consultant and TTTs training under the Project is now utilised by not only the EKI but also by the

FeTA/ReTAs. The EKI has been providing its own KAIZEN guidance for state enterprises (such as that operating a sugar plant), a low cost housing construction project (national project) and local TVETIs. Meanwhile, the trained TTTs are actively involved in KAIZEN dissemination activities, including KAIZEN guidance for the MSEs under their supervision through guidance for the vocational training instructors and extension workers of ReTAs.

③ Publicity and awareness-raising activities

i. EKI's own assertive PR activities and cooperative system with the media

The EKI has been conducting its own PR activities, including the hosting of a KAIZEN award ceremony, composition of a KAIZEN song, special KAIZEN programmes on television and radio and KAIZEN columns in newspapers. In response to such active KAIZEN dissemination efforts of the EKI, the Ethiopian media has been very cooperative, providing the very important foundations for the transformation of KAIZEN into a national movement.

ii. Customisation of KAIZEN

The EKI emphasises the customisation of the KAIZEN systems learned from Japan and third countries to suit Ethiopia. In particular, it has developed its own system of KAIZEN promotion teams (KPTs) which are small groups implementing KAIZEN at the shopfloor using Japanese QCC as a model and is attempting to spread this system to its client enterprises.

The results of the above three-sided analysis of the KAIZEN dissemination efforts in Ethiopia support the conclusion that the said efforts are being implemented nationwide under the leadership of the EKI along with efforts to develop the foundations for further dissemination in the years to come as these efforts have been supported by a strong commitment on the part of the Government of Ethiopia to KAIZEN, strong leadership and implementation capability on the part of the EKI and continual support by JICA.

2) Formulation of Long-Term Plan Indicating a Road Map for the Dissemination of KAIZEN

At the fourth meeting of the JCC, it was agreed that only a long-term plan would be formulated in view of the existence of such documents of the EKI as the WP and BSC, both of which covered the contents of a short-term plan for KAIZEN dissemination. Subsequently, a series of discussions on the draft long-term plan took place between the JET and EKI at every opportunity to revise its contents. In April, 2014, the JEC submitted its own draft plan to the EKI. Meanwhile, the EKI developed its own draft strategic plan for KAIZEN dissemination based on the results of discussions with the JET and commenced consultations with JICA on the next phase of cooperation in relation to the commencement of operation of a human resources development centre for business and industry which was one of the support measures proposed at the TICAD

V. It was then necessary to adjust the contents of the draft long-term plan to reflect such new development. After examination of the draft plan at a joint workshop between JET members and EKI director-class personnel in July, 2014, the EKI finalised the draft plan in August, 2014 and submitted it to the MoI in August, 2014. This draft plan was then forwarded to the NKC by the MoI for deliberation at the first meeting of the NKC in September, 2014. It is scheduled that the second final draft incorporating any comments, etc. made on the first final draft at the first meeting of the NKC will be re-submitted at the second meeting of the NKC to be held in January, 2015 after the completion of the Project. This draft will ultimately be approved by the NKC for its submission to the NPC.

3) Monitoring of Activities of Former Trainee EKI Consultants

In accordance with the recommendation made by the Mid-Term Evaluation, monitoring of the activities of the former trainee EKI consultants was conducted. The purpose of this monitoring was to discover what types of consulting activities they had conducted since their training and for whom and where in order to clarify effective techniques to be included in future training. A plan was made to prepare a questionnaire and to tally and analyse the answers and this plan was duly implemented. It was found that these EKI consultants had disseminated such basic KAIZEN systems as the 5S and elimination of muda to primarily organizations closely related to their own directorates, partly because of the sector-based organizational structure of the EKI. Another finding was that the textile and leather sectors had often received continued guidance after the end of the training because of the priority given to these sectors under the government policy of promoting (labour-intensive) light industries, especially the textile and leather industries, for export promotion. In regard to the themes for problem solving, an emerging need for TPM was found, particularly at sugar plants, and self-maintenance was the principal response to deal with such a need.

The same study found that the former trainee EKI consultants could not (were unable to) detect inherent problems at the shopfloor without the guidance of a Japanese expert because of their lack of experience and skills and that even when they were able to detect a problem, they found it difficult to continue to develop their newly acquired skills due to their reluctance to tackle problems for which there was no established problem solving procedure. Such reluctance led to fewer opportunities for them to practice the problem solving approach learned during the ICT. To rectify this situation, the training of trainers who are capable of leading former trainee EKI consultants is urgently required in addition to the development of consultation items which can strengthen the problem solving capability of former trainee EKI consultants.

4) Incorporation of Skill Evaluation in EKI Consultant Evaluation System

As a precondition for the EKI consultant evaluation system, a technical system consisting of four stages based on the difficulty of acquiring KAIZEN skills (A: pre-CRT evaluation (initial

evaluation); B: CRT evaluation; C: ICT evaluation; D: consulting practice) was examined and the criteria and methodology to evaluate the technical level of EKI consultants in training were established.

For Stage A (initial evaluation) and Stage B (CRT evaluation), an evaluation procedure to establish the level of understanding of the trainees was established by means of conducting the same test before and after the CRT to check the differences in the test results.

For Stage C, a Japanese expert conducts a general evaluation of the acquired skill of the trainees to apply KAIZEN systems at the end of the ICT by means of observation for comparison of the evaluation results with the self-evaluation results of the trainees prior to the ICT. This dual evaluation approach makes it possible to objectively evaluate the skill level of each EKI consultant. In the case of Stage D, time-series evaluation of the test results involving the same questions makes it possible to determine any changes of the technical skills before and after the ICT.

5) Introduction of Advanced Training and Follow-Up Training and Support for Creation of Model Enterprise(s) for KAIZEN

These three activities are inter-linked. As far as advanced training is concerned, although KAIZEN systems (actual techniques, methodology and underlying concepts) used in advanced training have already been mastered by the EKI consultants in the form of theoretical knowledge taught in the CRT, their practical experience of applying such techniques to actual situations is limited. The selection of those EKI consultants who have performed exceptionally well in the training under the Project as subjects for advanced training should make them candidates for future senior trainers. Meanwhile, as many host enterprises for the ICT have already introduced basic KAIZEN systems, the introduction of more advanced KAIZEN systems to those enterprises with positive ICT results will lead to the creation of model KAIZEN enterprises. At the same time, their follow-up training is a viable option because of the likely positive outcomes of such training. The fifth batch EKI consultant training began in September, 2014 based on this idea.

6) Monitoring of Post-Training Activities of TTTs and MSEs

In accordance with the recommendation made by the Mid-Term Evaluation, monitoring of those TTTs which had completed the training and host MSEs was conducted during Phase 2 of the Project. This monitoring consisted of a questionnaire survey and field survey and found several issues to be dealt with in order to make further KAIZEN dissemination in the coming years truly effective. These issues include (i) the necessary for regular follow-up guidance for TTTs by EKI consultants, (ii) the formulation of a Stage 2 KAIZEN guidance programme for those enterprises where the practice of the 3S is firmly established and (iii) the development of guidelines for participation in training by TTTs from each TVETI. The Japanese experts provided advice on simpler issues during the field survey. In the case of other issues, the JET compiled a report

which was submitted to the EKI with a verbal explanation of its contents so that these issues could be dealt with in the next phase of cooperation.

7) Utilisation of EKI Consultants Which Have Completed the Training

Nine former trainee EKI consultants so far have become trainers of their previous training courses. They are also engaged in the KAIZEN activities launched by the EKI itself (KAIZEN guidance for a sugar plant and a low cost housing construction project).

Six former trainee EKI consultants are also used as trainers for the training of TTTs while playing a leading role as trainers for the EKI's own training programme at local TVETIs.

8) Solving of Problems through Coordination between TTT Training-Related Organizations

The arrangements by the FeTA for transport vehicles to assist the TTTs training were insufficient to the extent that it was necessary to reduce the number of training sessions from the sixth batch onwards. Repeated requests were made via the EKI to the FeTA to provide the necessary vehicles and the issue was also repeatedly raised at JCC meetings. However, the problem was fundamentally not solved even though temporary improvements were seen from time to time. Another problem was the difficulty to secure a sufficient number of host enterprises for the ICT based on the long list prepared by the FeMSEDA/ ReMSEDAs because of the insufficient number of enterprises listed and heavy concentration of listed enterprises in certain industries. Continued requests were made to the FeTA up to the third batch training to improve this situation but the problem was not fundamentally solved as in the case of transport vehicles despite temporary improvement of the quality of the long list.

The use of TVET workshops as candidate sites for ICT was recommended but this recommendation was not taken up because of the different circumstances of TVET workshops and private enterprises.

9) Contribution to Formulation of Policies for Dissemination of KAIZEN

Although the details of the GTP-2 have not yet been publicly announced, it is almost certain that strengthening of the industrial competitiveness of industries of strategic importance (especially export industries and import substitution industries) will be one of its main pillars based on the speeches and remarks made by the Prime Minister and relevant ministers. As KAIZEN has the strong potential to contribute to strengthening of the export competitiveness from such viewpoints as productivity improvement, quality improvement, cost reduction, shortening of the delivery time and environmental conservation, the EKI has taken every opportunity to explain the importance of KAIZEN to the Prime Minister and relevant ministers via the MoI. Moreover, Japan's support for KAIZEN dissemination at the policy level includes the High Level Forum which is attended by the Prime Minister and various minister of Ethiopia. Taking every opportunity provided by this Forum, the JET has reported on the progress situation and

achievements of the Project to Professors K. Ohno and I. Ohno who play a leading role for Japan in this Forum, explaining the effectiveness and importance of KAIZEN for Ethiopia. On their part, the two professors have explained the importance of KAIZEN dissemination to the Prime Minister and relevant ministers based on the achievements of the Project. Because of these activities, it is now scheduled that the GTP-2 will make the KAIZEN dissemination efforts of the EKI an important pillar for the strengthening of the industrial competitiveness of Ethiopia.

10) Modification of PDM and PO

Following the recommendation made by the Mid-Term Evaluation Team, the PDM and PO were modified (refer to Appendix 12: PDM (Vers. Draft 1, 1.0 and 2.0) and 3. Implementation schedule of Activities (Achievements)).

(2) Recommendations at the Time of Completion Evaluation

The completion evaluation conducted in July, 2014 produced the recommendations outlined below for the project side.

1) Activities to be Conducted before Project Completion

Review of the three month long TTTs training and 45 days long TTTs training with a view to recommending the optimal mode of training in the project completion report

2) Activities to be Conducted after Project Completion

① Further strengthening of the business management and administrative capabilities of the EKI in the light of the rapid dissemination of KAIZEN

② Accumulation of company data by the EKI with a view to establishing a useful database for KAIZEN dissemination activities in the coming years, development of KAIZEN systems and business management of enterprises

③ Acquisition of advanced KAIZEN skills by EKI consultants to enhance their ability to solve the problems of achieving a higher productivity and product quality faced by enterprises

④ Development of a KAIZEN skill certification system for KAIZEN consultants

⑤ Preparation of a simpler KAIZEN manual for easy understanding by TTTs, TVET extension workers and MSEs to assist the dissemination of KAIZEN in local areas

Of these recommendations, the review results of the two modes of TTTs training and subsequent recommendations are described below in connection with “1) Activities to be Conducted before Project Completion”.

In regard to 2) Activities to be Conducted After Project Completion, the relevant knowledge and insight acquired through the three year implementation of the Project are described in Chapter 10 - Recommendations in the form of general proposals covering these activities.

3) Review of Two Modes of TTTs Training and Recommendations

There are three types of TTTs training conducted by the EKI without external assistance.

① Training of TVET officials
② Training of technical staff members of TVETIs
③ Training of TTTs

The third type of training is similar to the TTTs training under the Project in terms of the training method and targets. Because of such similarity, the differences are analysed here to indicate the desirable TTT training in the future.

The EKI's own TTTs training has the following characteristics.

· While the aim of the training is the same as that of the TTTs training under the Project, the training duration can be shortened if so desired by the FeTA, etc.

· 15 day CRT is followed by 30 day ICT.

· For the ICT, the same enterprise is visited twice a week for guidance purposes, totalling 8 visits in 30 days.

· The target enterprises for ICT in local areas are micro enterprises (five or less employees). In reality, however, most enterprises only have two or three employees. Therefore, twice weekly visits to give tasks do not adversely affect the work.

· There is no post-ICT survey to check the level of satisfaction of the host enterprises.

The following table compares the TTTs training under the Project with the TTTs training by the EKI.

Table 1: Comparison of TTTs Training Under the Project and TTTs Training by the EKI

Training Course		TTTs Training Under the Project	TTTs Training by the EKI
Number of Trainees (Actual)		131 TTTs	175 TTTs
Number of Host Enterprises for ICT (Actual)		129 MSEs	69 MSEs
Training Duration	CRT	15 days at the EKI	15 days in the target local area
	ICT	60 days at MSEs in AA	30 days at MSEs in the target local area
Principal KAIZEN Themes		5S; basics of the elimination of muda; quality improvement; productivity improvementk	5S; basics of the elimination of muda
Target Areas		Nationwide	7 regions
Instructors/Trainers		Japanese experts and EKI consultants	EKI consultants, technical staff members of the FeTA and TTTs in the area concerned

In regard to ICT, the TTTs training under the Project involves weekly visits for two months while the TTTs training by the EKI involves twice weekly visits for one month. This difference is based on the scale of the target enterprises and scope of the KAIZEN themes.

To be more precise, many target enterprises of the former are small enterprises with 10 or more employees while many target enterprises of the latter are very small micro enterprises with two or three employees. Consequently, a weekly visit for the former and twice weekly visits for the latter are judged to be appropriate frequencies for visits based on past experience. As far as the KAIZEN themes are concerned, the former takes up productivity and quality improvement in addition to the 5S and elimination of muda, resulting in an implementation period stretching over some two months. In contrast, KAIZEN activities considerably progress with an implementation period of around one month in the case of the latter as the KAIZEN themes are limited to the 5S and elimination of muda. More detailed analysis of such differences reveals that high level themes are introduced for the former with the understanding that "KAIZEN" is something which continues all the time" so that KAIZEN does not end with the 5S, etc. It is incorrect to say, however, that the themes set for the latter are problematic. There is a real need for the introduction of such basic KAIZEN techniques as the 5S at the production floor of very small micro enterprises with two or three employees which are prevalent in Ethiopia as this production floor is often very chaotic.

Based on the above characteristics of each mode of TTTs training, it is not problematic for the TTTs training under the Project and TTTs training by the EKI with different ICT durations to operate side by side. The selection and implementation of one of these two modes of training depending on the size of the target enterprises and scope of KAIZEN themes to be taken up is desirable.

3. Implementation schedule of Activities (Achievements)

Plan of Operation (PO)

Project Title : Project for Capacity Building for Dissemination of Quality and Productivity Improvement (KAIZEN)
Project Period : November 2011-October 2014 (36 months)
Target Area : Addis Ababa and Its Vicinity
Target Group : [EKI] EKI staff, including EKI Consultants / [TVET] TVET Trainers' Trainers (TTTs) of CRCs, / [Enterprises] private enterprises hosting ICT

Actual

Output	Activities	Expected Results	Schedule	Person in charge (Japanese side)
Output1	1-1. Based on the discussion between relevant organisations and agencies, the EKI develops short- and long-term KAIZEN dissemination plans and institutional frameworks including necessary budget, human resource allocation, business plans and service structure.	Short-term and long-term plans	1st Draft from JICA team; 2nd Draft from JICA team; Preparing short-term plan and Drafting long-term plan; Finalizing Long term plan; Approval at JCC	Kikuchi
	1-2. EKI establishes a network with relevant organisations including the private sector for quality and productivity improvement (KAIZEN).	Meeting of the working groups and others	Visit to related organizations; Periodic meetings with relevant organisations, as needed	Hanai
	1-3. EKI evaluates the effectiveness of quality and productivity improvement (KAIZEN) to the enterprises which participate in in-company training.	Impact Survey report	Collection and analysis of data; Interm Report; Collection and analysis of data; Final Report	Eguma
	1-4. EKI carries out necessary publicity activities including seminars to promote quality and productivity improvement (KAIZEN) and reviews the current situation and direction for awareness building including the awarding system.	Seminars and other publicity activities implemented	Preparation of the plan; Revision of the plan; Seminar Addis Ababa; Seminar Nazaret; Seminar Awasa; Seminar Dire Dewa; Seminar Bahir Dar; Seminar Mekele; Seminar Addis Ababa	Hanai & Ichikawa
Output2	2-1. EKI formulates the training plan for EKI Consultants.	EKI consultants training plan	Preparation of the plan; Feedback; Feedback; Feedback; Finalization	Sonoda & Kanai
	2-2. EKI develops the training curriculum for EKI Consultants.	EKI consultants training curriculum	Preparation of curriculum; Feedback; Feedback; Feedback; Finalization	Sonoda & Kanai
	2-3. EKI develops course materials of the training for EKI Consultants (including the customisation of KAIZEN Manual based on various needs of specific sub-sectors and the translation into Amharic).	Teaching materials for EKI consultants	Preparation of teaching materials; Feedback; Feedback; Feedback; Revision of KAIZEN Manual; Finalization and Translation	Sonoda & Kanai
	2-4. The EKI establishes the criteria and methodology to assess skill levels of EKI Consultants and undertakes initial assessment.	Established criteria, methodology and initial evaluation results	Preparation of evaluation criteria and method; Adjustment of evaluation criteria; Implementation of the first evaluation by EKI Consultants	Sonoda & Kanai
	2-5. EKI establishes the selection criteria and methodology, and selects LMEs which participate in in-company training in collaboration with the institutes and directorates of the Ministry of Industry (MoI).	Established LMEs selection criteria and method	Preparation of draft selection criteria and method; Review and revision; Review and revision; Review and revision; Establishment of the selection criteria and method	Sonoda & Kanai
	2-6. EKI conducts the CRT for EKI Consultants.	CRT led by EKI consultants	CRT 0%; CRT 32%; CRT 95%; CRT 100%; CRT 100%	Sonoda & Kanai
	2-7. EKI conducts the ICT for EKI Consultants.	ICT led by EKI consultants	ICT; CT; IQT; ICT; ICT	Sonoda & Sugimoto
	2-8. EKI examines how knowledge and skills acquired through the training course are effectively utilized on the ground by the EKI Consultants.	Criteria on which knowledge and skills of EKI consultants.	Preparing criteria	Sonoda & Sugimoto
	2-9. EKI regularly evaluates the achievement level by EKI consultants.	Evaluation results	Periodical Evaluation (details need to be discussed)	Sonoda & Sugimoto
	2-10. EKI monitors and evaluated the results of Activities 2-1 through 2-9.	Project progress report/ EKI activities report	Evaluation	Sonoda & Sugimoto
Output3	3-1. EKI formulates the plan of model training for TTTs and selects regions and Cluster Resource Centres (CRCs) based on consultation with Federal the TVET Agency (FeTA) and Regional TVET Agencies	Model training plan for TTTs, incorporating the selected regions and CRCs	Planning; Feedback; Feedback; Feedback	Sugimoto & Nishigaki
	3-2. EKI develops the training curriculum for TTTs.	Prepared TTTs training curriculum	Preparation of curriculum; Feedback; Feedback; Feedback; Feedback; Feedback; Feedback; Finilization	Sugimoto & Nishigaki
	3-3. EKI develops the course materials of training for TTTs (including the customisation of KAIZEN Manual for MSEs and the translation into Amharic) .	Teaching materials for TTTs training	Preparation of teaching materials; Feedback; Feedback; Feedback; Feedback; Feedback; Preparation of KAIZEN manual; Translation to Amharic	Sugimoto & Nishigaki
	3-4. EKI establishes the methodology to assess skill levels of TTTs and sets the selection criteria of training participants with the support of the FeTA.	Established TTTs evaluation criteria and method	Preparation of draft criteria and method; Feedback; Feedback; Feedback; Feedback; Feedback; Feedback; Finilization of evaluation criteria	Sugimoto & Nishigaki
	3-5. EKI selects training participants and undertakes initial assessment in collaboration with ReTAs.	First evaluation completed	Preparation of selection and evaluation; Adjustment of evaluation criteria; Implementation of the first evaluation by EKI Consultants	Sugimoto & Nishigaki
	3-6. EKI establishes the selection criteria and methodology to select MSEs which participate in in-company trainings with the support of the Federal MSE Development Agency (FeMSEDA).	Established MSEs selection criteria and method	Preparation of draft criteria and method; Feedback; Feedback; Establishment of criteria and method; Adjustment of criteria and method, as needed	Sugimoto & Nishigaki
	3-7. EKI selects host MSEs of ICT jointly with the ReMSEDAs.	List of selected MSEs	Preparation of selection criteria; Selection; Selection; Selection; Selection; Selection; Selection; Selection	Sugimoto & Nishigaki
	3-8. EKI conducts CRT for TTTs.	Implemented CRT	CRT; CRT; CRT; CRT; CRT; CRT; CRT; CRT	Sugimoto & Nishigaki
	3-9. EKI conducts ICT for TTTs.	Implemented ICT	ICT; ICT; ICT; ICT; ICT; ICT; ICT; ICT	Sugimoto & Nishigaki
	3-10. EKI evaluates the achievement level by trained TTTs.	TTTs achievement level evaluation report	Evaluation; Evaluation; Evaluation; Evaluation; Evaluation; Evaluation; Evaluation; Evaluation	Sugimoto & Nishigaki
	3-11. EKI monitors and evaluates the results of the activities from 3-1 to 3-10, and develops the TTTs' training guideline to share with the FeTA and ReTAs.	Project progress report/ EKI activities report	Evaluation Exercise	Sugimoto & Nishigaki

4. Results of Input

4.1 Results of the Dispatch of Experts

Name	Fields	Days of Assignment up to End of 2014				
		2011	2012	2013	2014	Total
Mr. Tsuyoshi Kikuchi	Chief Advisor / Institutional Development	32	238	136	126	532
Mr. Seiji Sugimoto	Quality and Productivity Improvement (MSE 1)	32	305	174	-	511
	Deputy Chief Advisor/Quality and Productivity Improvement (MSE 1)	-	-	-	129	129
Mr. Masaaki Hanai	Deputy Chief Advisor/Inter-agency Coordination / Dissemination Facilitation	32	209	161	-	402
	Inter-agency Coordination/ Dissemination Facilitation	-	-	-	115	115
Mr. Hiroshi Osada	Higher Education Capacity Building	-	-	-	11	11
Ms. Yukiko Haneda	Higher Education Capacity Building Assistant	-	-	-	106	106
Mr. Hideo Sonoda	Quality and Productivity Improvement (LME 1)	32	256	162	149	599
Mr. Nobuo Kanai	Quality and Productivity Improvement (LME 2)	-	238	146	149	533
Mr. Naoya Nishigaki	Quality and Productivity Improvement (MSE 2)	-	293	186	116	595
Mr. Taisuke Nishida	Quality and Productivity Improvement (LME3, MSE 3)	-	174	125	-	299
Mr. Shigeru Tashiro	Quality and Productivity Improvement (MSE 4)	-	150	-	-	150
Mr. Hideki Tabuchi	Quality and Productivity Improvement (MSE 3)	-	-	-	130	130
Ms. Sawa Hasegawa	Impact Survey Management	32	58	-	-	90
Ms. Kiyomi Eguma	Impact Survey Management / Project Coordination 2	-	59	128	-	187
	Impact Survey Management	-	-	-	48	48
Mr. Koji Nishizaki	Project Coordination / Dissemination Facilitation Assistant	32	-	-	-	32
Mr. Tomoyoshi Koume	Project Coordination / Dissemination Facilitation Assistant 2	-	173	179	-	352
Ms. Yoko Ichikawa	Project Coordination / Dissemination Facilitation Assistant	-	-	-	236	236
Ms. Misa Tamura	Project Coordination / Training Planning	-	-	61	-	61
Ms. Akane Morimoto	Project Coordination / Training Planning	-	-	-	113	113
Ms. Natsuko Ozawa	Third Country Training and C/P training Implementation Management	-	-	-	16	16
Mr. Mitsuo Yamada	Publicity Activities Management	-	-	42	-	42
Ms. Sachiko Tochigi	System Development; Dissemination 2	-	-	24	-	24
Ms. Yuko Imazawa	System Development; Dissemination 2	-	-	18	-	18
Ms. Hiroe Nakajima	Facilitation of Publicity Activities		-	34	-	34
	Total (days)	192	2,153	1,576	1,444	5,365

4.2 Assigned Fields for Individual Experts

The assigned fields for individual experts are listed in Table 2.

Table 2: Work Assignment for Each Expert

Name	Assigned Field	Work Assignment
Tsuyoshi KIKUCHI	Chief Advisor / Institutional Development	➢ Formulation of the Long Term Plan. ➢ Formulation of the annual activities plan and monitoring and evaluation system. ➢ Monitoring and evaluation of activities, and feedback.
Seiji SUGIMOTO	Quality and Productivity Improvement (MSEs 1) Deputy Chief Advisor / Quality and Productivity Improvement (MSEs 1)	➢ Formulation of training curriculums and teaching materials. ➢ Establishment of criteria and methodology for evaluating the technical level of TTTs. ➢ Implementation of CRT/ICT for TTTs. ➢ Evaluation of the TTTs achievement level. ➢ Formulation of an improvement plan based on evaluation and feedback of training activities for TTTs. ➢ Assisting the work of Chief Advisor as Deputy Chief Advisor.
Masaaki HANAI	Deputy Chief Advisor / Inter-agency Coordination/ Dissemination Facilitation Inter-agency Coordination/ Dissemination Facilitation	➢ Building of collaboration with related agencies in Ethiopia. ➢ Formulation of the PR and information transmission strategy. ➢ Implementation of seminars and PR activities. ➢ Assisting the work of Chief Advisor as Deputy Chief Advisor.
Hiroshi OSADA	Higher Education Capacity Building	➢ Conducting current situation survey for master's program for kaizen. ➢ Advice on general operation of master's course for kaizen. ➢ Advice on and assisting in formulation of curriculums and materials used in master's course for kaizen. ➢ Advice for professors/lecturers in charge. (Capacity Building) ➢ Advice on building of collaboration with other agencies and enterprises (industry-government-academia) including EKI.
Yukiko HANEDA	Higher Education Capacity Building Assistant	➢ Assisting in conducting current situation for master's course for kaizen. ➢ Assisting in formulating a plan for capacity building for master's course for kaizen. ➢ Assisting in implementation of capacity building for master's course for kaizen and monitoring the activities. ➢ Coordination and assistance for arranging logistics related to capacity building for higher education.
Hideo SONODA	Quality and Productivity Improvement (LMEs 1)	➢ Formulation of training curriculums and teaching materials. ➢ Establishment of criteria and methodology for evaluating the technical level of EKI consultants. ➢ Implementation of CRT/ICT for EKI consultants. ➢ Evaluation of EKI consultants' achievement level. ➢ Formulation of an improvement plan based on evaluation and feedback of training activities for EKI consultant. ➢ EKI examines how knowledge and skills acquired through the training course are effectively utilized on the ground by the EKI consultants.
Nobuo KANAI	Quality and Productivity Improvement (LMEs 2)	➢ Formulation of training curriculums and teaching materials. ➢ Establishment of criteria and methodology for evaluating the technical level of EKI consultants. ➢ Implementation of CRT/ICT for EKI consultants. ➢ Evaluation of the EKI consultant achievement level. ➢ Formulation of an improvement plan based on evaluation and feedback of training activities for EKI consultant. ➢ EKI examines how knowledge and skills acquired through the training course are effectively utilized on the ground by the EKI consultants.

Name	Assigned Field	Work Assignment
Taisuke NISHIDA	Quality and Productivity Improvement (LMEs 3) /(MSEs 3)	➢ Implementation of CRT/ICT for EKI consultants. ➢ Evaluation of the EKI consultant achievement level. ➢ Implementation of CRT/ICT for TTTs. ➢ Evaluation of the TTTs achievement level.
Naoya NISHIGAKI	Quality and Productivity Improvement (MSEs 2)	➢ Formulation of training curriculums and teaching materials. ➢ Establishment of criteria and methodology for evaluating the technical level of TTTs. ➢ Implementation of CRT/ICT for TTTs. ➢ Evaluation of the TTTs achievement level. ➢ Formulation of an improvement plan based on evaluation and feedback of training activities for TTTs.
Shigeru TASHIRO	Quality and Productivity Improvement (MSEs 4)	➢ Implementation of CRT/ICT for TTTs. ➢ Evaluation of the TTTs achievement level. ➢ Formulation of an improvement plan based on evaluation and feedback of training activities for TTTs.
Hideki TABUCHI	Quality and Productivity Improvement (MSEs 3)	➢ Assisting in implementation of the Training for TTTs. ➢ Assisting in formulating materials including kaizen manuals. ➢ Examining activities of TTTs and MSEs that completed the training by the project and obtaining feedbacks from the survey. ➢ Conducting survey on implementation status on KAIZEN Promotion Team (KPT).
Sawa HASEGAWA	Impact Survey Management	➢ Managing implementation of the impact survey.
Kiyomi EGUMA	Impact Survey Management / Project Coordination Impact Survey Management	➢ Managing implementation of the impact survey. ➢ Control logistics associated with the project. ➢ Undertaking other related activities associated with the project.
Hiroshi NISHIZAKI	Project Coordination / Dissemination Facilitation Assistant	➢ Control logistics associated with the project. ➢ Undertaking other related activities associated with the project.
Tomoyoshi KOUME	Project Coordination / Dissemination Facilitation Assistant	➢ Control logistics associated with the project. ➢ Supporting for convening of JCC. ➢ Arrangements for visitors and the mid-term evaluation team. ➢ Assisting in drafting and editing progress reports. ➢ Undertaking other related activities associated with the project.
Yoko ICHIKAWA	Project Coordination / Dissemination Facilitation Assistant	➢ Control logistics associated with the project. ➢ Supporting for convening of JCC. ➢ Arrangements for visitors and the terminal evaluation team ➢ Assisting in planning and implementation of seminars and PR activities.
Misa TAMURA	Project Coordination / Training Planning	➢ Planning and implementing the training in Japan as well as in Malaysia.
Akane MORIMOTO	Project Coordination / Training Planning	➢ Planning and implementing the training in Japan as well as in Malaysia. ➢ Assisting in drafting and editing progress reports. ➢ Undertaking other related activities associated with the project.
Natsuko OZAWA	Third Country Training and C/P training Implementation Management	➢ Implementing and managing the Third Country Training. ➢ Implementing and managing the C/P Training.
Mitsuo YAMADA	Publicity Activities Management	➢ Planning and implementation of seminars and PR activities. ➢ Assisting in drafting and editing progress report.
Sachiko TOCHIGI	System Development; Dissemination 2	➢ Planning and implementing panels and videos.
Yuko IMAZAWA	System Development; Dissemination 2	➢ Planning and implementing the side event.
Hiroe NAKAJIMA	Facilitation of Publicity Activities	➢ Control logistics associated with the project. ➢ Undertaking other related activities associated with the project.

4.3 Results of Counterpart (C/P) Training (In Japan and Third Country)

C/P Training in Japan

By visiting government and private organizations which play key roles in the promotion of KAIZEN in Japan, the training aims the trainees to obtain knowledge on their role in the dissemination of KAIZEN, organizational structure and management methods of these organizations, human resources development methods and other relevant matters. The training was held two times on February 2013 and on October 2013 and ten trainees in total were participated in. The director level of EKI staff was targeted to the first training and the trainer level of EKI staff was targeted to the second training to enhance effectiveness of the technical transfer of the project.

The details of the each training are as follows;

(1) The first C/P Training in Japan

1) Schedules

17th February, 2013 ~ 2nd March, 2013 (Two weeks)

2) List of the Participants of the Training in Japan

No	Name	Directorate	Position
1	Ezra Hailemariam (Mr.)	Corporate Communication Directorate	Director
2	Bekalu Worku (Mr.)	Higher Education Capacity Building Directorate	Director
3	Lebeza Alem (Mr.)	TVET Capacity Building Directorate	Director
4	Solomon Mengistu (Mr.)	Agro Directorate	Director
5	Negatwa Asrat (Ms.)	Research and Certification Directorate	Lead Consultant (Acting Director)

(2) The Second C/P Training in Japan

1) Schedules

7th October, 2013 ~ 18th October, 2013 (Two weeks)

2) List of the Participants of the Training in Japan

No	Name	Directorate	Position
1	Tesfu Yigedeb Abay (Mr.)	Corporate Communication Directorate	Director
2	Gebre Kebede Tsegaye (Mr.)	Service Sector Improvement Directorate	Director
3	Weldegerima Selamawit Kiros (Ms.)	Agro Directorate	Lead KAIZEN Consultant
4	Tufa Samson Kebede (Mr.)	Service Sector Improvement Directorate	KAIZEN Consultant
5	Awassew Fetene Getachew (Mr.)	TVET Directorate	KAIZEN Consulntant

The Third County Training

By visiting government and private organizations in Malaysia which are more advanced KAIZEN promoted compare to Ethiopia, the training aims to obtain knowledge on KAIZEN and to enhance effectiveness of the technical transfer in the Project. The training was held two times on June 2013 and on August 2014 and thirty six trainees in total were participated in.

(1) The first training in the third country (Malaysia)

1) Schedules

10th June, 2013 ~ 21th June, 2013 (Two weeks)

2) List of the participants of the third country training

No	Name	Position
1.	Demelash Zewdu Tegegne (Mr.)	Assistant Kaizen Consultant
2.	Dereje Rahmet Tesfa (Mr.)	Senior Kaizen Consultant
3.	Selamawit Tilahun Dibaba (Ms.)	Kaizen Consultant
4.	Dagmawit Gizaw Gebre (Ms.)	Kaizen Consultant
5.	Feven Addis Kebede (Ms.)	Junior Kaizen Consultant
6.	Yidnekachew Terefe Zemedagegnehu (Mr.)	Kaizen Consultant
7.	Fekadu Abate Haddis (Mr.)	Senior Kaizen Consultant
8.	Samuel Birru Gebremichael (Mr.)	Junior Kaizen Consultant
9.	Yenesew Gashaw Amsalu (Mr.)	Kaizen Consultant
10.	Mulugeta Adugna Hirpo (Mr.)	Assistant Kaizen Consultant
11.	Asnake Gudisa Gonfa (Mr.)	Senior Kaizen Consultant
12.	Tujuba Ragasa Garedew (Mr.)	Senior Kaizen Consultant
13.	Binyam Teklu Mekonnen (Mr.)	Assistant Kaizen Consultant
14.	Mintesinot Melaku Haile (Mr.)	Junior Kaizen Consultant
15.	Zeineba Siraj Sherif (Ms.)	Assistant Kaizen Consultant
16.	Henok Birmegey Elele (Mr.)	Junior Kaizen Consultant

(2) The second training in the third country (Malaysia)

1) Schedules

17th August, 2014 ~ 29th August 2014 (Two weeks)

2) List of the participants of the third country training

No	Name	Position
1.	Moges Sewnet Fentie (Ms.)	Planning Director
2.	Hagos Temesgen G/Egziabher (Mr.)	Communication Director
3.	Berhe Haftu Hailu (Mr.)	Chemical Director
4.	Gidafie Awol Kasssaw (Mr.)	Lead Kaizen Consultant
5.	Bekele Mesfin Wondimu (Mr.)	Lead Kaizen Consultant
6.	Haile Mindaye Yirga (Mr.)	Assistant Kaizen Consultant
7.	Diriba Meron Berhanu (Ms.)	Assistant Kaizen Consultant
8.	Asebe Bedasa Fenta (Mr.)	Assistant Kaizen Consultant
9.	Fili Weldemhret Aregay (Mr.)	Assistant Kaizen Consultant
10.	Mersha Firegenet Kinfe (Ms.)	Assistant Kaizen Consultant
11.	Mekonnen Selamawit Zerihun (Ms.)	Assistant Kaizen Consultant
12.	Yihdego Selamawit Solomon (Ms.)	Assistant Kaizen Consultant

No	Name	Position
13.	Abebe Meron Altaye (Ms.)	Assistant Kaizen Consultant
14.	Bitew Haimanot Tesfahun (Ms.)	Assistant Kaizen Consultant
15.	Regasa Tigist Tolasa (Ms.)	Assistant Kaizen Consultant
16.	Bayou Meseret Teshome (Ms.)	Assistant Kaizen Consultant
17.	Zerga Kirubel Tadesse (Mr.)	Junior Kaizen Consultant
18.	Abebe Andualem Ayele (Mr.)	Junior Kaizen Consultant
19.	Tebeka Fikadu Seyoum (Mr.)	Assistant Kaizen Consultant
20.	Umer Jemil Abdela (Mr.)	Junior Kaizen Consultant

4.4 Procurement of Equipment

Three vehicles, one copy machine, eight projectors, 11 notebook PCs and six video cameras were procured under the Project and provided to the Ethiopian side.

In the case of the three vehicles, even though they were delivered to the EKI in June, 2012, the lengthy process of the official transfer of their ownership, etc. meant that the actual handing over was only completed in June, 2013, one year after initial delivery.

The handing over of the other equipment, except for the notebook PCs, was completed in November, 2014 when the project-related work in Ethiopia came to an end as requested by the EKI. Copies of the agreements for handing over are included in Appendix 4: Agreement for Handing Over of Equipment ① and Appendix 5: Agreement for Handing Over of Equipment ② in this report.

4.5 Actual Cost of General Administration

The actual cost of actual administration by phase is shown in the following table.

Phase	General Administrative Cost (yen)
Phase 1	24,778,000
Phase 2	13,423,000

5. Reporting on Technology (Skill) Transfer Activities

5.1 Activities Related to Output 1

5.1.1 Formulation of Long-Term Plan for Dissemination of KAIZEN

The work to formulate a long-term plan underwent the following three stages.

① Clarification of a future image of the EKI
② Discussions on the necessary strategy and activity plan, forming the backbone for a long-term plan
③ Establishment of a long-term vision and strategic framework

The assistance provided by the JET and response of the EKI at each stage are described next.

The textbook procedure for the formulation of such a plan is to start with the establishment of a long-term vision following by the formulation of a long-term strategy, long-term plan and activity plan

in that order. However, this order was reversed in part for the formulation of a long-term plan for KAIZEN dissemination.

(1) Clarification of a future image of the EKI

For the purpose of formulating a long-term plan, it was necessary to clarify a future image of the EKI. The JET considered it important to introduce the activities of three private organizations which had significantly contributed to the dissemination of KAIZEN activities in Japan to the EKI. To be more precise, these three organizations are the Union of Japanese Scientists and Engineers (JUSE) which had promoted the quality improvement movement in post-war Japan, the Japan Productivity Center (JPC) which encouraged the productivity improvement movement through management-labour cooperation and the Japan Management Association (JMA) which led the efficiency improvement movement. The actual activities included visits to these organizations by the DG and director-class personnel of the EKI during their training in or invitation to Japan. Academic thesis and other useful documents on these three organizations were also introduced. The purpose of these activities was to give leading EKI personnel an understanding of the history and activities of these organizations which contributed to the economic development of Japan so that they themselves could develop a future image of the EKI (especially the desirable organizational structure and necessary institutional arrangements). As the JET provided the EKI with useful information in a timely manner, it can be concluded that the JET was successful in helping the DG and director-class EKI personnel develop a common future image of the EKI.

(2) Discussions on the necessary strategy and activity plan, forming the backbone for a long-term plan

For the formulation of a long-term plan, the discussions between the JET and EKI progressed in four steps. In the first step, the JET formulated a draft long-term plan (excluding an action plan) and discussed it with the EKI to finalise the desirable contents of the long-term plan. Through brainstorming sessions, the JET came up with a draft strategy to form the core of the long-term plan. This strategy was presented to the EKI and attracted much interest. The second step involved the division of work whereby the EKI prepared the strategy and action plan in regard to the formulation of the long-term plan while the JET prepared such fundamentals as the visions and goals of the long-term plan. This division of work was proposed by the EKI and the JET was concerned whether or not the separately worked components of the long-term strategy would fit each other in the end. Because of this, the JET internally conducted the work to revise the strategy and action plan. While such revised strategy, etc. was presented to the EKI twice, it appears that the EKI was not fully satisfied with the idea of the division of the work. It is assumed by the JET that the reason for such dissatisfaction originated from uncertainty on the part of the EKI regarding whether or not the long-term strategy and plan for the dissemination of KAIZEN would be compatible with the GTP-2 under preparation. Major progress was made in the third step where the EKI made a proposal to the JET to shorten the period covered by the

long-term plan from 10 years to 5 years. At this step, the EKI explained to the JET that the long-term plan must be consistent with the GTP-2. In response, the JET asked about the possible form of inclusion of KAIZEN in the GTP-2 but was told that the picture was unclear at the time. Subsequently, the EKI informed the JET that it had formulated its own draft long-term plan. (The EKI only informed the JET in late July, 2014 of its own draft long-term plan and its submission to the government.) At this point, the draft long-term plan formulated by the JET coexisted with the comparable draft plan of the EKI. In addition, following the commencement of consultations between JICA and the EKI regarding the next phase of cooperation in the light of the launch of an industrial human resources development centre in Ethiopia as envisaged in the TICAD-V, it became necessary to coordinate the said two long-term plans and activities of this centre.

At the fourth step, the draft long-term plan of the JET was integrated to the draft long-term plan of the EKI to produce a unified and streamlined plan.

When the draft plans of the JET and EKI were compared, some 90% of the strategic elements were found to be identical. In addition, the EKI's strategy was found to be much more biased that the JET version. Having considered these differences, the JET led the next stage of the work where a fishbone diagramme of the strategy streamlined the duplicated strategic elements while incorporating those elements identified only by the JET's or EKI's plan and those which were absent in both plans. For this work, special attention was paid to the compatibility of the long-term plan for the EKI with the not yet disclosed GTP-2. This was followed by further work to develop an activity plan to implement each strategy (strategic element) and these plans were compiled as documents.

The DG of the EKI was very satisfied with the draft long-term plan for the EKI which was produced after the series of work described above. At a joint workshop of the JET members and director-class EKI personnel held on 11th July, 2014, the DG actively expressed his view and the workshop successfully ended with a consensus of the participants on the draft long-term plan.

As a result, the JET and EKI mutually agreed a target period of the long-term plan of five years from 2015/16 to 2019/20 and slotting of the activities into the eight goals envisaged by the EKI's long-term strategy and implementation plan. When reviewing the above formulation process of the draft long-term plan, it is apparent that up to the second step of the process, the EKI did not pass on information concerning the progress situation of the GTP-2 and any plan to incorporate some KAIZEN-related issues in the GTP-2, partly because of the gap between the EKI and JET regarding the basic concept of the long-term plan. This situation led to the coexistence of two draft plans as mentioned earlier. The EKI's stance was that as it had submitted its own draft long-term plan formulated in May, 2014 to the government, any further work on the draft long-term plan by the JET was unnecessary. However, as a result of the JET's patient but persistent efforts to further examine the desirable contents of the long-term plan, the EKI

recognised that the JET's draft long-term plan was more comprehensive and of a higher level. Consequently, the EKI agreed to hold a workshop on 11th July. After this workshop, the EKI agreed to present a unified draft long-term plan to the JCC and this presentation duly took place at the Sixth Meeting of the JCC.

(3) Establishment of a long-term vision and strategic framework

The EKI had the idea of listing the KAIZEN systems and classifying them into three or four levels based on the difficulty of learning and also difficulty of introducing them to enterprises. In response, each expert of the JET prepared a list of KAIZEN systems believed to be essential for Ethiopia. These lists were then put together and a single table listing the ranked KAIZEN techniques was produced. With the assistance of Professor Osada, each rank was clearly defined and the Strategic Framework of Ethiopia KAIZEN (Version 1) shown in Table 3 was prepared with some additional explanations added for some KAIZEN systems. Professor Osada contributed to the work to discuss the suitability of classifying individual KAIZEN techniques into different levels with the EKI and JET and to finalise the classification of KAIZEN techniques. In addition, he gave a memorable name to each level as a phase or benchmark. In this innovative work, when Level 1 (mind-set level) is characterised by development study-type technical cooperation, the Project has reached Level 2 (elementary level). The export competitiveness of Ethiopia will be enhanced if Level 3 (strategic level) is reached by the end of the next phase of cooperation. Here, the achievement of individual KAIZEN techniques is linked to the entire image of the Project (future image of the EKI) in an accurate manner. While it is assumed that assistance for advanced KAIZEN techniques classified as Level 2 or Level 3 will be provided in the next phase of cooperation, the EKI can simultaneously disseminate basic KAIZEN techniques largely classified as Level 1 nationwide through its own KAIZEN dissemination activities.

Table 3: Strategic Framework of Ethiopia KAIZEN (Version 1)

Stage		Phase		Level of KAIZEN		Benchmark	KAIZEN Methodology and Technology			Knowledge level
							KAIZEN Management	KAIZEN System	KAIZEN Tool	
S-1	Basic KAIZEN	P-1	(2009-2011)	L-0	Mind-set level	Introduction	KAIZEN Philosophy KAIZEN Concept Demining Cycle (PDCA, SDCA) Primary Level KPT (QCC)	5S Safe Work	Primary MUDA elimination	
		P-2	(2012-2014) GTP 1	L-1	Elementary level	Leader in Ethiopia	Morale Management Inventory Management Purchasing Management Visual Management	Fundamentals of QC Autonomous maintenance Consulting procedure Basics of MPR Basics of JIT	Medium MUDA elimination 7 QC tools Process analysis Flow process analysis Morale survey Work study Motion study Principle of motion economy	Bachelor
							Leadership KAIZEN Medium KPT(QCC) Delivery Management Cost Management	QC story Standardization Cost accounting Standard costing Plant layout Production scheduling	Ratio-delay study Shortening set-up time SOP (Standard Operation Procedure) Work sampling Line balancing Time study Man-hour loading Direct costing Target costing	
S-2	Advanced KAIZEN	P-3	(2015-2020) GTP 2	L-2	Systematic level	Leader among African countries	Production Management Daily Management Advanced Level KPT(QCC) Cycle time Management	ISO 9001 Preventive maintenance ABC (Activity-based costing) 16 major losses TOC (Theory of Constraints) Problem Specific approach Cell production system	Advanced MUDA elimination New 7 QC tools Why-why analysis Multi-activity analysis Ergonomics Value Engineering	MSc
							Cross Functional Management TQM (Total Quality Management) TPM (Total Productive Maintenance) TPS (Toyota Production System)	Quality Assurance Engineering Economics MRP (Material Requirements Planning)	Statistical method DOE (Design of Experiment) QC process chart Process capability Index Standard time Multi-activity analysis Balanced scorecard	
				L-3	Strategic level	Leader among developing countries	New Product Development Management Financial Management Policy Management IKT (Innovative KAIZEN Team)	ISOs Series and other International Standards Competitive Analysis	Five force analysis SWOT/PEST Analysis Financial Analysis Quality function deployment FMEA (Failure Mode Effect Analysis) FTA (Fault Tree Analysis) Reliability Engineering SMED (Single Minutes Exchange of Die)	PhD
		P-4	(2021-2025) GTP 3	L-4	Excellent level	World class	Innovation Management Global Production Management Value Management	Value Analysis Business Modeling Business Systems Analysis Idea generation methods	TRIZ Off-shoring Value stream Mapping Production Sharing	

This framework constitutes a milestone for the EKI's endeavours to disseminate KAIZEN as well as a framework for the ability-based grading of EKI consultants. The framework also concretely shows the desirable state of the EKI in response to the level of KAIZEN dissemination and is said to have been incorporated in the revised draft long-term plan formulated by the EKI. As this long-term plan is expected to be partly reflected in the GTP-2, it is hoped that the framework will fulfil the important role of acting as guidelines for future KAIZEN dissemination activities in Ethiopia.

The final draft long-term plan formulated by the EKI was submitted to the MoI in August, 2014 and its contents were discussed at the First Meeting of the NKC held in September, 2014. As this plan is written in Amharic, the JET members have not established a full picture of the plan. According to the DG of the EKI, the plan newly incorporates such targets as “fostering of private sector consultants” and “strengthening of the service sector” in addition to “strengthening of the international competitiveness of export industries and import substitution industries” which is one of the main pillars of the GTP-2.

It is now anticipated that the second draft plan reflecting the results of discussions at the NKC meeting will be resubmitted to the Second Meeting of the NKC to be held in January, 2015 after the completion of the Project for its final approval by the NKC for forwarding to the NPC which is responsible for the formulation of the GTP-2.

5.1.2 Strengthening of Organizational Structure of EKI for Dissemination of KAIZEN

The organizational structure of the EKI for the dissemination of KAIZEN has been developed and strengthened in a comprehensive manner through the project-related activities listed below.

- Establishment of a training system for KAIZEN dissemination by the EKI through the implementation and management of training sessions for EKI consultants and TTTs
- Input by the JET to the EKI to strengthen the latter's organizational structure through a series of discussions as part of the long-term plan formulation process
- Establishment and strengthening of a collaborative network with Ethiopian organizations through seminars and PR activities in AA and local cities
- Support for the capacity building of the DG and staff members of the EKI through their training in Ethiopia, Japan and a third country as well as the invitation of C/P personnel to Japan and also their feedback to the EKI on their return to Ethiopia

Once concrete noteworthy input by the JET regarding strengthening of the organizational structure was the introduction and explanation of the activities of three private sector organizations (JUSE, JPC and JMA) which had contributed to the dissemination of quality and productivity improvement activities in Japan as already mentioned in 5.1.1 by the JET members. The matters explained included the nationwide dissemination of QCC activities, training method as well as qualification certification

system for QCC leaders such as the Deming Prize and other awards of the JUSE, nationwide dissemination of the productivity improvement movement and methods to measure and publicise productivity of the JPC and management method for consulting firms, incentives for consultants and consultant evaluation method of the JMA. Visits to these organizations were incorporated in the training in Japan or invitation to C/P personnel to Japan as opportunities to directly learn further details of the various activities of these organizations.

The EKI has been implementing various activities utilising information obtained from the Japanese organizations and customising these activities to suit the conditions in Ethiopia.

- Development of a solid organizational structure of the EKI in line with the rapid increase of its staff members using what had been observed and heard in Japan as references
- Establishment of a KAIZEN award system using the National QCC Meeting and Deming Prize in Japan as examples to commend enterprises and individuals who have achieved significant KAIZEN results
- Development of KPTs as small groups to advance KAIZEN at the shopfloor using Japan's QCC as a model and active efforts to spread this system to enterprises
- Composition of a KAIZEN song based on the idea of a QC song used by the JUSE for some time and publicising of KAIZEN to the Ethiopian public via radio and other means

As described above, the EKI has swiftly implemented what could be implemented without much preparation while seeking to deepen its knowledge of matters which require further examination and/or research. One example of the latter is the EKI's hope to see the inclusion of such matters as methods to foster and evaluate EKI consultants, consultant qualification system, productivity assessment study and disclosure of the findings and refinement of the award system as components of the next phase of cooperation.

Based on the above, it is reasonable to conclude that the EKI's organizational structure has been steadily strengthened through a series of activities under the Project.

The lessons learned in the process of strengthening the EKI's organizational structure are summed up below.

- The assisting side is required to provide a speedy response to match the rapid development of the EKI.
- As far as plan or project formulation, which is something which staff members of the EKI, particularly the DG, is good at, is concerned, it is preferable for the EKI to independently formulate a plan or project with the JET providing useful information, outline plan project and advice if required in a timely manner instead of the JET spending much time formulating its own plan or project. In regard to the types of work at which the EKI excels, the role of the

JET should be restricted to the provision of useful information, ideas and constructive comments so that the JET can prioritise its assistance for those types of work which the EKI is not yet good at.

- Because of the rapid expansion of the scope of the EKI's activities, there have been instances where requests for assistance made by the EKI have not been listed in the PDM. In such cases, it is essential for the JET to consult with JICA while examining the necessity and relevance of the requested assistance with a view to revising the PDM with the consent of the principal JCC members.
- The EKI and JET should develop the habit of presenting and discussing their ideas freely with each other by means of daily communication instead of presenting them for the first time on such formal occasions as meetings of the JCC and WG.

5.1.3 Strengthening of Collaboration with Ethiopian Organizations

The purposes of strengthening the collaboration with Ethiopian organizations are (i) to assist the promotion of activities designed to disseminate KAIZEN to private enterprises effectively using the resources of each organization and (ii) to contribute to the development of the foundations for the national dissemination of KAIZEN as a national movement. Because of these purposes, the emphasis of the initial stage of the Project (first year) was placed on the sharing of project-related information with and the gathering of opinions (on possible future cooperation with the EKI) from central government organizations directly linked to the Project (MoI, MoE, MoUDC, FeMSEDA, FeTA, etc.), exchange of KAIZEN training information and requests for cooperation for KAIZEN dissemination with stakeholder organizations in AA (ReMSEDAs, ReTAs and other government organizations as well as such education/research institutions as the ECSU, EMI, TVETI and AAU) and a fact-finding survey (regarding the work related to KAIZEN) on private sector associations (ECCSA and AACCSA). From the second year onwards, the emphasis shifted to strengthening of the collaboration with local stakeholder organizations (mayor's offices, ReMSEDAs, ReTAs, departments of commerce, industry and investment, TVET colleges, local EMI branches, universities and chambers of commerce and industry) as well as enterprises willing to send their employees as seminar lecturers to present their own cases of KAIZEN. The purpose of these activities is the smooth organization of KAIZEN seminars in local cities with the precondition that the EKI's Corporate Communication Directorate share information and works together with the JET.

The main organizations and enterprises contacted are listed in Table 4.

Table 4: Ethiopian Organizations Contacted during the Project Period

Organization	First Year (November, 2011 to October, 2012)	Second Year (November,2012 to October, 2013)	Third Year (November,2013 to October, 2014)
Central Government Organization	MoI, MoE, MoUDC, PMO, Min. of Science & Technology, Ethiopian Standards Agency, FeMSEDA, FeTA, PPESA	MoI, MoE, MoUDC, PMO, FeTA, FeMSEDA	MoI
Local Government Organization	Addis Ababa City (ReMSEDAs, ReTAs, Productivity Improvement Center)	Oromia Regional Government (Head Office, ReMSEDAs, Investment Commission, TVET Commission); Adama City Government (Mayor Office, TVET College); SNNPR Region (ReMSEDAs, ReTAs, Investment Agency, Mass Media Organization); Hawassa City Government	Dire Dawa (Mayor's Office, Trade & Industry Dept.); Bahir Dar (Mayor's Office, MSE Bureau); Amhara Regional Government (MSED/TVET Bureau, Industry & Urban Development Bureau); Amhara Credit & Saving Institution, Mekelle City Government (Mayor Office, TVET Office) ; Tigray Mass Media Agency
Educational/ Research Institution	Ethiopian Civil Servant Univ., Ethiopian Management Inst., TVETI, EDRI, Addis Ababa University, Mekelle University	Adama Science & Technology University, AA. Institute of Technology, Adama TVET College, EDRI, Adama Polytechnic College, Hawassa University, Hawassa TVET College, Mekelle University	LIDI, TIDI, Dire Dawa University, Dire Dawa Management Training Institute, Dire Dawa TVET College, Amhara Management Inst., Bahir Dar University, Mekelle University,
Private Sector Association	Addis Ababa Chamber of Commerce & Sectoral Assoc. (AA-CCSA), Ethiopian-CCSA (E-CCSA)	Oromia-CCSA, SNNPR-CCSA, AA-CCSA, E-CCSA	Dire Dawa-CCSA, Bahir Dar-CCSA, AA-CCSA, E-CCSA
Enterprise	Zenith, Hailu Abera, Wondosen Woodprocessing, NINA Garment, Alemn, Wub, Sabahar, KANA	Crystal Tannery, Pasque Guiseppe, Excel Plastic, Peacock Shoes, MARU Metal, Geosynthetics Industrial Works, Sabahar, Kotabe Metal Tools, Wonji Sugar Factory	Zemili Paint, Peacock Shoes, Dire Dawa Food Complex, Metehara Sugar Factory, Adama Spining Factory, AFRO FM Radio, Nova Star Garment, Daniel Woodworking Factory, COMEL Development, Educational Materials Prodct. & Distribution Enterprise, DH Geda Blanket Factory, Woubishet Tamiru & Friends Metalwork Partnership
Donor Organization	GIZ, UNIDO	AUC, UNDP	

While the maximum possible efforts were made under the Project to facilitate collaboration with wide-ranging Ethiopian organizations as shown in Table 4, the collaborative activities with government organizations except for the MoI and MoE ended unsatisfactorily. One reason for this was the long-term absence of an officer in the Corporate Communication Directorate during the first year of the Project. Moreover, of the four subsequently assigned officers to this Directorate, two, including the Director, left their positions after only one year while the remaining two officers were frequently assigned to the EKI's own activities. This situation made it practically impossible for personnel in the Corporate Communication Directorate to allocate sufficient time to the strengthening of the KAIZEN-related collaboration with Ethiopian organizations as envisaged by the Project. Meanwhile, while the promotion of collaboration with donor organizations is believed to be of particular importance for the future expansion of KAIZEN dissemination activities, there was a special circumstance where the DG of the EKI was reluctant to contact external organizations until such time as the ability of the EKI's staff members achieves a certain level. This reluctance presumably originated from his concern that any shortcoming of the staff members in their responses to external requests for KAIZEN activities could level to questioning of the capability of the EKI itself.

Nevertheless, the collaboration between the EKI and stakeholder organizations has fairly progressed in AA through the EKI's own activities. Positive developments have been achieved in local cities where collaboration between the EKI and local organizations has been emerging through the establishment of a KAIZEN institute in each main local city. For the further promotion of KAIZEN dissemination activities in local areas (especially Amhara State and Tigray State in the north), strengthening of the collaboration with local EMI branches is believed to be particularly important along with strengthening of the collaboration with universities, chambers of commerce and industry and other local organizations. While the EMI is under the jurisdiction of the Ministry of Public Services, its local branches receive financial support from state governments. The active cooperation (especially in terms of human connections, finance and use of facilities) of local EMI branches will certainly facilitate KAIZEN dissemination activities in local areas.

For the EKI to become a leading organization for KAIZEN dissemination in Africa beyond its national boundaries, it must face such challenges as the promotion of KAIZEN activities in neighbouring African countries and the development of a regional network of countries to enable third country training. To smoothly meet these challenges, the EMI must secure a sufficient manpower level for its Corporate Communication Directorate and also ensure the quality of staff by recruiting those who are fluent in English in view of external communication.

It was initially planned to establish a working group (WG) for the purpose of examining themes to be proposed to the JCC in advance. This WG was subsequently thought to be unnecessary because of (i) the establishment of a CFT functioning like the planned WG within the EKI since July, 2012 and (ii)

the approval at the Third Meeting of the JCC held in December, 2012 of such private sector associations as the ECCSA and AACCSA as formal members of the JCC.

5.1.4 Formulation of Publicity and Information Service Strategy and Implementation of Seminars and PR Activities

The EKI has been actively publishing its KAIZEN activities by means of publishing a KAIZEN magazine, opening a KAIZEN home page, PR of KAIZEN using the mass media (newspapers, magazines and radio/television), awarding of excellent KAIZEN enterprises ("KAIZEN Award"), composition of a KAIZEN song and educational seminars and panel discussions targeting media representatives for which the JET has provided advice and/or assistance as requested by the EKI. Examples of such assistance are the preparation and provision of KAIZEN PR materials for the media, advice on how to start a website and also on the desirable contents of the home page and the suggesting of excellent enterprises selection criteria. The JET has also provided assistance for the EKI to respond to interview requests by radio/television broadcasters.

In the first year of the Project, there was a long period of activities without C/P personnel because of the delayed recruitment of staff members of the Corporate Communication Directorate of the EKI (no recruitment took place in the first 10 months or so of the Project) and the participation of staff which had been recruited in a civil servant training course. However, project-related activities went ahead even during this period with the cooperation of KU members and know-how regarding collaboration with Ethiopian organizations (selection of organizations to be contacted, communication method, introduction of policies, contents of KAIZEN activities and preparation of reference materials and others) was transferred to staff members of the Directorate in question via the KU members. Know-how regarding the hosting of PR seminars which were introduced in the second year of the Project (programme development, selection of collaborating organizations and lecturers for seminars, decision on venues and dates, method to request cooperation and seminar preparation process) was transferred to the relevant staff members through a series of seminars. Even though there was some doubt regarding the ability of the newly recruited staff members to sufficiently implement publicity activities, various publicity activities were effectively implemented utilising the experience and know-how of these staff members at their original workplaces (EIA, ReMSEDAs, AA Mass Media Agency and ecbp/GIZ) with the guidance of MoI personnel and the outsourcing of some activities to the private sector. As a result, the development of a network and strengthening of the collaboration with such organizations likely to be involved in the promotion KAIZEN publicity in the coming years as local organization organizations in main cities, private sector associations, enterprises, universities, research institutes and the mass media was successfully achieved.

A publicity seminar was held seven times in six main cities in Ethiopia (AA, Adama, Hawassa, Dire Dawa, Bahir Dar and Mekelle) and each seminar attracted some 130 - 150 people, including those from enterprises, state and municipal governments, universities, research institutes, TVETIs, chambers

of commerce and industry and mass media. The programme of the seminar held in local cities focused on “the necessity for KAIZEN”, “basic knowledge of KAIZEN (5S, 7 muda and QCC)” and “presentation of an actual case(s) of KAIZEN”. The lecturers were mainly EKI staff members, university teachers and entrepreneurs. These seminars were highly valued by the participants in general and many voiced a hope for the continuation of such seminars. As each seminar included a question and answer session, positive exchanges of opinions took place. The results of the questionnaire survey conducted in five local cities are shown in Table 5.

Table 5: Questionnaire Survey Results for KAIZEN Seminars in Local Cities (5 Point System)

<⑤ Sufficiently; By all means; ④ Almost; If possible; ③ Fair; Not sure; ② Not really; ① Not at all>

	Adama 2013/2/12		**Hawassa** 2013/5/23		**Dire Dawa** 2013/12/5		**Bahir Dar** 2014/4/24		**Mekelle** 2014/8/9		**Average Score**
Number of Participants	**130**		**127**		**148**		**146**		**135**		
1) Was the seminar satisfactory?	⑤ 54%	⑤+④ **88%**	⑤ 44.7%	⑤+④ **80.2%**	⑤ 38.9%	⑤+④ **83.3%**	⑤ 19.4%	⑤+④ **67.4%**	⑤ 28.3%	⑤+④ **82.6%**	⑤+④ **80.3%**
	④ 34%		④ 35.5%		④ 44.4%		④ 48.0%		④ 54.3%		
2) Were you able to understand the KAIZEN activities and EKI’s activities?	⑤ 37%	**88%**	⑤ 49%	**87.0%**	⑤ 35.6%	**81.2%**	⑤ 14.4%	**63.9%**	⑤ 28.6%	**83.5%**	**80.7%**
	④ 51%		④ 38%		④ 45.6%		④ 49.5%		④ 54.9%		
3) Are you willing to implement KAIZEN at your organization?	⑤ 50%	**81%**	⑤ 66.2%	**86.4%**	⑤ 66.2%	**86.4%**	⑤ 56.5%	**82.6%**	⑤ 65.9%	**88.3%**	**84.9%**
	④ 31%		④ 20.2%		④ 20.2%		④ 26.1%		④ 22.4%		
4) Do you want to host ICT?	⑤ 44%	**79%**	⑤ 57.9%	**88.3%**	⑤ 67.8%	**94.5%**	⑤ 60.2%	**90.3%**	⑤ 71.1%	**96.7%**	**89.8%**
	④ 35%		④ 30.4%		④ 26.7%		④ 30.1%		④ 25.6%		

1) The proportion of the participants who were either sufficiently or almost satisfied with the seminar was 80.3%.

2) The proportion of the participants who were either sufficiently or almost understood KAIZEN was 80.7%.

3) The proportion of the participants who are willing to implement KAIZEN either by all means or if possible was 84.9%.

4) The proportion of the participants who want to host ICT either by all means or if possible was 89.8%.

As the above figures show, the simple average for the positive response to each question was high at more than 80%.

More detailed analysis of the questionnaire results shows that both the satisfaction with the seminar and understanding of KAIZEN in Bahir Dar are much lower at the 60% level than the levels recorded in other cities. In general, more than half of the participants of the KAIZEN seminars in local cities were representatives of local enterprises. In the case of the seminar in Bahir Dar, the number of participants from the TVET colleges exceeded that from local enterprises. The fact that these college-related participants already had some previous knowledge of KAIZEN probably explains the relatively low level of satisfaction because they had higher expectations of the seminar than the other participants. These results indicate the need to organize the programme for future seminars based on the actual needs and levels of the potential participants.

The final seminar held in AA focused on the concrete results of the Project and possible next phase of cooperation by JICA. The actual presentations at this seminar included “the final report on the project” by the JET, “reporting on the impact survey results” by the EDRI, “trends of KAIZEN and the GTP-2” by the DG of the EKI and “concept of the next phase cooperation project” by the chief representative of the JICA Ethiopia Office. The total number of participants of this seminar was 158, including 13 government officials and 87 representatives of enterprises. The replies to the questionnaire survey conducted indicate that many of the participants acknowledge the effectiveness of KAIZEN and would like to see the continuation as well as wider scope of the application of KAIZEN guidance.

5.1.5 Support for Strengthening of the Capacity to Provide Higher Education

In order to further enhance the consulting service skills of the staff members of the EKI, the EKI has concluded a five year agreement with the Management Engineering Department of the Ethiopian Institute of Technology - Mekelle (EiT-M) and a KAIZEN master's course (MSc in KAIZEN) mainly serving staff members of the EKI commenced in March, 2014. In the first year, 22 people[2] (20 from the EKI and two from the FeTA) have enlisted in this course.

Meanwhile, a Japanese expert was assigned under the Project to strengthen the EKI's capability to assist the capacity building of higher education institutions. The scope of work includes monitoring of the above-mentioned MSc course in KAIZEN and advice on general aspects of course administration, including review of the teaching materials and course curriculum. The actual contents and results of this course are described next.

[2] Of these, two (Mr.Kibrom Mebratu and Ms. Hiletwork Bekele) have now left the course as they have been officially selected to study in Japan under the African Business Education (ABE) Initiative for Youth scheme.

(1) Monitoring of the Course

Following the commencement of the MSc course in KAIZEN in March, 2014, the Japanese expert assigned to assisting the strengthening of the capability of the EKI's Higher Education Institutions Capacity Building Directorate commenced monitoring of the course by means of conducting (i) a series of interviews with the persons concerned and (ii) a questionnaire survey with students of the course.

This master's degree course lasting for approximately one and a half years is designed for students to complete five subjects each in the first and second semesters (total of 10 subjects) and to write a thesis in the third semester. However, the planned commencement of the course in February, 2014 was postponed until the end of March the same year. In subsequent months, the planned commencement dates for various subjects have been repeatedly changed or postponed. Interviews with EKI and EiT-M personnel have confirmed that there was a scheduling problem as both organizations gave priority to their own work schedules. At the EKI, a situation arose where the scheduled lectures in MSc course overlapped with the planned dates for project-related activities as the commencement date for each subject and overall schedule of the MSc course were only informed to those participating in the course.

The frequent changes and postponement of the course schedule led to a situation in July, 2014 where it was unclear whether or not the lectures on the five subjects scheduled to take place in the first semester could be completed by mid-August. With the active advice of the expert, both the EKI and EiT-M prioritised the progress of the course and the teaching in the first semester was completed almost as planned. However, some staff members of the EKI who were enrolled in the course expressed the opinion that the scheduling problem with the course had such negative impacts as the stagnation of routine work at the EKI.

The questionnaire survey on the management and teaching subjects of the MSc course with the enrolled students found that more than half of the students were satisfied with the course. Some constructive criticism expressed by students include “the average of a one week intensive course was too short”“, more case studies are necessary” and “it would be good if Japanese lecturers were also involved in the course” (see Appendix 6: Questionnaire Survey Results with Participants of the MSc Course in KAIZEN).

(2) Response to Monitoring Results

With the help of Professor Osada, an expert working for the Project, advice as well as guidance sessions were arranged in July, 2014 in the form of the confirmation of pending issues identified based on the monitoring results, review of the teaching materials and course syllabus, attendance at classroom lessons and interviews with instructors. The outline of such guidance and situation of the achievements of the course so far are described next.

1) Course Management

① Contents of provided guidance

- As it is essential to abide by the planned start date for and number of teaching hours, it is imperative to strengthen the work to arrange a viable teaching schedule between the EKI and EiT-M.
- With intensive lectures covering one subject in one week, the available themes for classroom teaching and exercises are limited. The teaching schedule should be changed to divide one day's teaching into two sessions to teach two subjects on each day.

② Situation of achievements

In response to the recommendations outlined in ① above, the EKI consulted the EiT-M regarding the management of the second semester teaching of the MSc course in KAIZEN and changed the teaching schedule adopted in the first semester (Table 6 to that shown in Table 7 for the second semester to teach two subjects each day as recommended.

Table 6: Teaching Schedule for the First Semester

	Subject	Professor	Date
First semester	1. Kaizen Philosophy	Dr. Fasil	2014.3.31-2014.4.11
	2. 3MU and 5S Principles	Dr. Fasil	2014.3.31-2014.3.11
	3. Work Study and Plan Layout	Mr. Solomon / Mr. Bekalu	2014.5.26-2014.5.30
	4. Research Methodology	Dr. Gabremeskel	2014.7.29-2014.8.1
	5. Total Quality Management	Dr. Idris	2014.8.4-2014.9.12

Table 7: Teaching Schedule for the Second Semester Based on Recommendations by Professor Osada

		Subject	Professor	Date
Second semester	First Round	1. Total Productive Maintenance	Will be informed	2014.9.29-2014.10.3
		2. Change Management	Will be informed	
		3. Toyota Production System	Will be informed	2014.10.6-2014.10.10
		4. Communication Skill	Will be informed	
		5. Quality Control Circles and 7 Quality Control Tools	Will be informed	2014.10.13-2014.10.17
	Second Round	6. Total Productive Maintenance	Will be informed	2014.12.22-2014.12.26
		7. Change Management	Will be informed	
		8. Toyota Production System	Will be informed	2014.12.29-2015.1.2
		9. Communication Skill	Will be informed	
		10. Quality Control Circles and 7 Quality Control Tools	Will be informed	2015.1.5-2015.1.12

Nevertheless, the first lecture for the second semester scheduled to take place on 29th September, 2014 was postponed because of the participation of the EiT-M teacher assigned to the course in another seminar and other reasons, failing to adhere to the revised teaching schedule shown in Table 7.

The likely causes of the problems associated with the management of the MSc course in KAIZEN are weak follow-up by the EKI and seemingly low level of commitment by the EiT-M. These problems were presented to the DG of the EKI and the DG accepted the ongoing problems as facts and expressed his intention to consult with the person responsible for course management at the EiT-M at the earliest opportunity.

2) Teaching Materials and Curriculum

① Contents of provided guidance

- The teaching contents of the MSc course in KAIZEN were found to slightly differ from the curriculum originally prepared by the EiT-M and this fact was verified. It was also pointed out to the EiT-M that the curriculum normally carries the names of the instructors responsible for the lessons.
- When checked, the principal teaching materials distributed in the classroom were found to be copies of an e-book downloaded on the Internet and copies of materials personally acquired. The JET pointed out that the use of such materials could create a problem of copyright infringement.

② Situation of achievements

The course instructors from the EiT-M explained to the JET that the problem with the curriculum had been dealt with by the curriculum committee of the EiT-M. The JET suggested that the EKI should be consulted regarding any change of the curriculum. It is now planned that the EKI will hold a meeting with the EiT-M to discuss the matter.

3) Implementation Method of Lessons

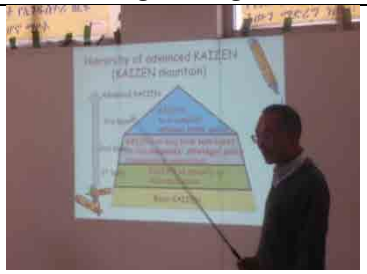
① Contents of provided guidance

- As teaching at a university involves only a limited number of case studies, the introduction of actual cases of KAIZEN by a Japanese expert or EKI consultant who has undergone training under the Project and who has acquired much practical experience of actual cases should comprise part of the teaching.
- The use of graphs and photographs in PowerPoint presentations is highly recommended. Instead of one-sided teaching involving the reading of text on PowerPoint slides, communication with students regarding the presented matters should be pursued.
- While lectures form the core of teaching, group work should be introduced.

② Situation of achievements

Following the special lecture on TQM (Total Quality Management) given by Professor Osada on 4th August, 2014, two experts (Mr. Sonoda and Mr. Kanai) gave special lectures

on “Change Management” and “Toyota Production System” on 3rd October, 2014, featuring actual cases of KAIZEN in the field, to which not only the course students but also staff members of the EKI were invited. The lectures attracted some 40 people and were well received.

Lecture by Prof. Osada	Lecture by Mr. Sonoda	Lecture by Mr. Kanai
Total Quality Management	Change Management	Toyota Production System
		

While some course instructors were interested in the teaching method, including the introduction of group work, others did not like any external guidance on their teaching method, suggesting the importance of establishing a relationship of trust in advance with course instructors.

(3) Collaboration with Addis Ababa University

In June, 2014, the EKI submitted a proposal for the introduction of a Ph.D course (with a master's course) to Addis Ababa University (AAU) for the purpose of domestically producing post-graduates with a high level of knowledge of KAIZEN. A meeting was held at AAU in July to examine this proposal. The contents of this proposal are summarised as follows.

With guidance provided by the JET, KAIZEN systems and techniques of different levels have been transferred to the EKI and EKI consultants have been duly trained. However, the capacity of Ethiopian enterprises to absorb the guidance provided by EKI consultants is limited.

Further enhancement of the knowledge and skills of the EKI consultants is required to enable them to take full leadership at each of the four levels of KAIZEN.

The EKI has concluded an agreement with the EiT-M to implement the MSc course in KAIZEN based on the concept of training KAIZEN experts to match the actual needs in Ethiopia at an Ethiopian university.

The EKI is hoping to launch Ph.D courses on “KAIZEN management”, “quality management” and “production management” in collaboration with AAU.

AAU showed strong interest in this proposal. In August, the EKI explained the Strategic Framework of Ethiopia KAIZEN (Version 1) (see Table 3) which was jointly prepared by the

EKI and JET to interested parties at AAU. The EKI emphasised the need to progress the stage of KAIZEN involved in the next phase of JICA's cooperation from basic KAIZEN to more advanced KAIZEN and, therefore, collaboration with a high level university is essential. In response, AAU made sure that ownership of any Ph.D or master's programme would belong to the university and representatives of AAU's College of Business and Economics and its Department of Management showed a positive response to the EKI's proposal.

(4) Recommendations Regarding Management of the MSc Course and Introduction of Ph.D Course

1) Introduction of More Cases Studies in the MSc Course

The MSc course in KAIZEN jointly run by the EKI and EiT-M mainly consists of academic/theoretical lectures in line with the teaching materials used. As such, there are few opportunities for the students to learn about actual cases. In fact, many of the students pointed out an insufficient number of case studies in their replies to the questionnaire survey. To fill the gap, special lectures by the Japanese experts were arranged. In the future when Japanese experts are unavailable, conscious efforts should be made to consolidate case studies by means of, for example, inviting EKI consultants currently playing a leading role as trainers as guest lecturers for the course. Meanwhile, the exchange of actual experience in the field dealing with concrete cases between EKI consultants should also prove to be effective to enhance the positive achievements of the Project.

2) Implementation of Distance Lectures Using Communication Equipment

Through monitoring of the MSc course in KAIZEN, a problem relating to schedule coordination because of emphasis on their own schedules by the EKI and EiT-M was found. This problem appears to have become more difficult to solve as a teacher from the EiT-M has to travel to AA for each lecture. To rectify this situation, Professor Osada has proposed the introduction of distance lectures (television lectures) using communication equipment. Such television lectures can minimise the travelling of EiT-M teachers between AA and Mekele, alleviating the burden of schedule coordination. It will also be possible to deliver special lectures from Japan for the MSc course students.

3) Recruitment of External Participants for MSc Course

The EKI has signed an agreement with the EiT-M to train its staff members in the latter's MSc course in KAIZEN and plans to continue this course for its staff members. The students of the inaugural class include two TVET staff members. From the viewpoint of ensuring the organizational expansion of the EKI and the dissemination of KAIZEN in Ethiopia, an increase of the number of students from public as well as private sector organizations other than the EKI to approximately half of the class in the future is believed to be necessary.

4) Establishment of Ph.D Course at AAU

The EKI originally planned to establish a Ph.D course as well as a master's degree course at AAU. However, given the fact that a master's degree course has already been introduced at the EiT-M, an additional course at AAU will result in competition between these two higher education institutions. Professor Osada has expressed the opinion that only a Ph.D course should be introduced at AAU and the EKI agrees with this opinion.

5) Establishment of a Support Committee in Japan

It is a simple fact that the current MSc course in KAIZEN at the EiT-M lacks sufficient teaching staff in terms of both quantity and quality. As a way of rectifying this, Professor Osada has proposed the establishment of a support committee in Japan as a window to assist the MSc and Ph.D courses in KAIZEN in Ethiopia. It is assumed that advice on curriculum development for the EiT-M and AAU and special lectures for these courses will be made available by this committee. Apart from television lectures based in Japan using communication equipment as mentioned earlier, direct guidance by members of the committee visiting Ethiopia is also feasible. As candidates to act as the secretariat for this committee, Professor Osada has named the JPC, JUSE and JMA, all of which are KAIZEN-related organizations with specialities similar to those of the EKI.

(5) Other Issues

Appendix 7: Basic Information on Higher Education in Ethiopia (Abstract) is included in this report for reference purposes.

5.2 Activities Related to Output 2

Technology (skill) transfer to EKI consultants was conducted through one month long CRT designed to develop the capacity concerning the theoretical aspects of KAIZEN and five month long ICT designed to develop the capacity concerning the practical application of KAIZEN. These activities are described in more detail next along with their achievements, problems encountered and (possible) solutions.

(1) Transfer of KAIZEN Techniques and Theory through CRT

1) Activities Relating to transfer of KAIZEN Techniques and Theory through CRT

The main components of the CRT are shown in Table 8.

Table 8: Components of CRT

1	KAIZEN Basics	**Concept of KAIZEN; 5S; reduction of muda; 7 tools of QC; QC story; small group activities**
2	Productivity Improvement Techniques/ Tools	IE basics; **process analysis**; time study; motion study; layout; line balance; operation analysis
3	Quality Improvement Techniques/ Tools	**Defect reduction**; process capacity; use of control charts; **QC process charts**
4	Cost Reduction Techniques/Tools	Composition of cost; break-even point analysis; indirect cost apportioning method; VE; department-specific cost reduction techniques
5	Delivery Time Reduction Techniques/ Tools	Concept of delivery time; delivery time reduction method; production plan; ERP
6	ICT Procedure	Selection of enterprises; preliminary study; consulting procedure; required abilities of consultants

The KAIZEN techniques/tools shown in bold in Table 8 are those frequently used in ICT.

Although the ICT trainees did not have many opportunities to use some of the cost reduction and delivery time reducation techniques/tools, they are aware that all of these are essential for a KAIZEN consultant. In the first batch CRT for EKI consultants, the Japanese experts conducted the entire lectures based on the teaching contents shown in Table 8. In the case of subsequent batches, the proportion of the lectures given by EKI consultants gradually increased to the 100% level by the fourth batch CRT. The progress of the theoretical understanding of the trainees is shown in Table 9. In the fourth batch training, an instructor from the EKI planned to conduct a partial test on the theoretical understanding but decided not to because of the “unsuitability of the questions” given the poor performance of the trainees in the CRT. (The questions were the same for all batches to ensure the compatibility of the test results). The progress of the theoretical understanding of the trainees from pre-CRT to post-CRT was also measures to assess the ability of the EKI consultants as CRT instructors. A significant difference was observed with the test results for those subjects taught by the Japanese experts in the second and third batches and those for subjects taught by the EKI consultants. To increase the level of the understanding of trainees, it is essential for instructors to emphasise certain crucial issues and also to explain the background of particular techniques/tools. Insufficient consideration on the part of the EKI consultants in regard to these matters appears to be the cause of the said significant differences, resulting in the poorer performance of the trainees. The departure of capable personnel who had acted as instructors for the previous batch from the EKI is one reason for this because such departure forced those with less experience and knowledge to act as instructors. However, it must be noted that there was no significant difference between the Japanese experts and EKI consultants as far as the level of satisfaction with the CRT in the questionnaire survey with the trainees is concerned.

Table 9: Advancement of Theoretical Understanding among Participants to the 1st Batch CRT through 3rd Batch CRT

	First Batch		Second Batch		Third Batch	
	Before	After	Before	After	Before	After
Average	43	62	55	66	49	63
Highest	48	66	62	70	68	74
Lowest	36	52	44	60	31	50

2) Achievements Related to Transfer of KAIZEN Techniques and Theory through CRT and Pending Issues

The gradual transfer of the responsibility for CRT from the Japanese experts to the EKI consultants was successfully achieved as envisaged in the original Work Plan. However, there are some pending issues to be dealt with as described below.

① Securing of the services of high quality instructors

The departure of some KU members and two excellent trainers selected from the first batch training from the EKI made it necessary for less experienced and less knowledgeable EKI consultants to fill the CRT instructor positions, resulting in a qualitative decline of the CRT. There were instances of these newly assigned instructors cutting the number of CRT lessons on important basic subjects without prior consultation with the JET. In this context, one pending issue is the scrutinisation of the specialities of each EKI consultant to prepare a skill map of the available human resources based on the teaching history and results of the test to check the level of understanding of the assigned subjects for each candidate EKI consultant to act as a CRT instructor in order to systematically secure the services of high quality instructors.

② Thorough understanding of basic matters

From the second batch onwards, there was an increase of the number of trainees who had studied IE at a university. Because of their pretentions that they have a full understanding of the theoretical aspects of KAIZEN because of their university education, they tend to ignore CRT on basic matters while being eager to move to concrete KAIZEN processes and cases. It must be stressed that without a thorough understanding of the principles and rules, a KAIZEN consultant cannot possibly deal with actual issues in the field in a proper manner. It was found that some instructors had downloaded information on the Internet similar to the teaching materials used in the CRT and had used this information with blind trust. It is more important to respect the standard textbook, etc. regarding basic matters and to fully equip oneself with a profound knowledge of these matters. The KAIZEN manual developed under the Project is expected to function as an effective tool for this purpose.

③ Transfer of training management skills

Conscious efforts were made under the Project to develop solid foundations for CRT by means of preparing high quality teaching materials and educating EKI consultants to become CRT instructors. As a result, a viable CRT system was established. However, the transfer results were insufficient concerning course management know-how which covers curriculum design, preparation of teaching materials and summary (resume) of teaching subjects to measurement of the level of understanding by a test before and after the CRTwith a view to ensuring the desirable quality of CRT through feedback if necessary. In this context, the sustainability of the Project in the post-project period has not been fully secured. When the EKI continues to conduct similar training without external assistance, it is essential for the EKI to aim at improving the quality of the training management based on the training system established under the Project.

(2) Transfer of Application Skills Through ICT

1) Activities Related to Transfer of Application Skills Through ICT

The ICT under the Project was conducted in accordance with the following sequence.

① KAIZEN guidance for enterprise owners, requesting the selection of core members involved in ICT

② Group training (four days) on KAIZEN basics for the selected core members

③ Decision of the theme(s) (KAIZEN basics and solutions to individual problems) through a preliminary survey and subsequent discussions

④ Kick-off meeting and “Big Cleaning Day” at each host enterprise

⑤ Visiting guidance for each host enterprise (approximately 15 visits on a weekly basis)

⑥ Symposium on the last day of ICT to which a representative(s) of each host enterprise is invited and awarding of completion certificates

The number of enterprises hosting ICT and number of trainees (EKI consultants) and their ranks are shown in Table 10.

Table 10: Number of Host Enterprises for ICT and Trainees and Their Composition

		Batch Number					
		1	2	3	4	5	Total
Actual Numbers of Host Enterprises		9	10	15	13	4	51
Actual Number of Trainees	Total	10	9	15	15	8	57
	Junior Consultant	10			1	2	13
	Assistant Consultant		9	11	11	6	37
	Consultant			2	1		3
	Senior Consultant			2	1		3
	Lead Consultant				1		1

The participation of higher ranking consultants increased with the progress of the training to the later batches although it is apparent that younger consultants who were expected to become core members of the EKI in the future were selected in the fifth batch training. Table 11 compares the self-evaluation results of their progress in terms of practical ability as a result of the ICT and those by the experts.

Table 11: Comparison between Self-Evaluation Results by Trainees and Those by Experts

No.	Item	Self-Evaluation by Trainees			Evaluation by Experts	Difference between Two Types of Evaluation at the End of ICT
		Beginning of ICT	**End of ICT**	4 Months after the End of ICT	**End of ICT**	
1	Observation skill	2.1	3.4	4.3	3.0	0.4
2	Ability to find muda	1.7	3.7	4.2	3.0	0.7
3	Logical and QC-oriented thinking	1.8	3.6	3.9	2.4	1.2
4	Problem solving skill	1.9	3.6	4.1	2.6	1.0
5	Intuitive ability	2.1	3.4	4.1	2.6	0.8
6	KAIZEN application skill	1.9	3.8	4.2	2.8	1.0
7	Leadership	2.1	3.6	4.2	2.8	0.8
8	Ability to raise questions	2.3	3.7	4.3	3.0	0.7
9	Ability to communicate	2.8	4.0	4.6	3.0	1.0
10	Ability to manage a project	1.8	3.3	4.0	2.6	0.7
11	Coaching skill	2.0	3.4	4.2	2.6	0.8
12	Ability to resolve difficulties	2.0	3.7	4.2	2.6	1.1
	Average	2.0	3.6	4.2	2.8	0.8

The self-evaluation scores in Table 11 illustrate the feeling among the trainees that their abilities increased in line with their accumulation of practical experience through ICT. In contrast, the scores marked by the experts are lower than the self-evaluation scores as they believe that the abilities of the trainees are still insufficient. For example, when visiting a soap plant, an expert realised that the labour-intensive process constituted a bottleneck in the production and that improvement of this process would double the productivity with the same manpower and would treble the profit. When presented with an improvement measure by the expert, the plant manager wanted to implement the measure as he agreed with the assessment of the expert. However, the EKI consultants, including a trainer, strongly insisted on the implementation of operator maintenance as part of TPM. There is a tendency among the EKI consultants to prefer themes of which the improvement procedure is clear due to their handling of the same themes in the past rather than unfamiliar themes for which a manual or established procedure is unavailable even if the anticipated impacts are considerable. Because of the insistence of the EKI consultants, basic steps for operator maintenance were introduced to the plant. Even though the owner was satisfied with this, the wasteful production floor with low productivity has remained unaddressed.

What is critical for consulting is not to try to sell what one can do or want to do to a client but to find actual problems at the production floor and share them with top management personnel to

draw out their commitment to viable solutions. In this manner, the consulting service can help to strengthen the business quality of client enterprises.

As mentioned above, the abilities of the EKI consultants as consultants are not fully satisfactory but the prospect is not gloomy. It takes a long time to acquire the necessary knowledge and skills regarding practical issues, such as KAIZEN. While it may be true that experts can provide effective KAIZEN guidance in a short period of time, the long-term development of the abilities required of a KAIZEN consultant can be better achieved when experts help them to realise where the problems lie and encourage their own efforts to solve them in order to build up their experience of small but successful outcomes instead of simply dealing with problems on behalf of the trainees. Because of this belief, the JET finds it more appropriate to devote its assistance to backing up the EKI consultants rather than dealing with various problems at the fore.

2) Change of Application Skills (Problem Solving Capability) of Consultants Through ICT

Table 12 compares the abilities of 53 EKI consultants before and after their training under the Project as evaluated by the Japanese experts.

Table 12: Comparison of Problem Solving Capability Level of EKI Consultants Before and After Their Training

Rank	Quantitative Value	Problem Solving Capability Level	Before	After
F	0	No previous experience of problem solving	49	
E	0.5	Can solve a given problem with help	4	20
D	1.0	Can solve a given problem without help		24
C	1.5	Can recognise and define specific problems		5
B	2.0	Can recognise, define and solve specific problems		4
A	2.5	Can recognise and define structural and/or enterprise-specific problems		
S	3.0	Can recognis, define and solve structural and/or enterprise-specific problems to produce systematic solutions		

* The quantitative value indicates the number of themes which a consultant can simultaneously handling during the ICT period.

At the start of the Project, the starting rank of the EKI consultants was “E” for four KU members trained under the Pilot Project and “F” for other consultants. One consultant acting as an instructor for the first to fourth batches and three others which have left the EKI appear to have reached the rank of “B” at the end of the fourth batch training. Of the 49 trainees which started with the rank of “F”, three trainees and two others who have since left the EKI appear to have reached the rank of “C” based on their experience of performing the role of trainer. 20 trainees advanced to the rank of “E” and 24 others reached the rank of “D”.

In general, the trainees steadily improved their capability but their attained level depended on the quality of training opportunities as well as personal quality of each trainee. For example, it has been verified that there is a correlation between the results of the test on understanding of the CRT

subjects and opinions expressed in and reactions to group discussions, etc. and the level reached by individual trainees at the end of the ICT. The main factors for such a difference are such personal qualities and inate intelligence (logical thinking and ability to understand) and enthusiasm (interest in various topics and proactiveness) and it does not appear to be right to judge the EKI consultants based on their career and/or educational background. Even though the speed of capacity development is fast in the case of those trainees who studied IE at university, there are cases of trainees without previous knowledge of IE recording similar or even faster capacity development. Those who were selected to become trainers after the initial training have developed more KAIZEN application skills because of their encounter with many different cases as trainers.

3) Achievements Relating to Transfer of Application Skills (Problem Solving Capability) Through ICT and Pending Issues

① Accumulation and visualistion of successful cases and consolidation of a package of solutions

With the problem solving approach newly adopted under the Project, one major achievement is the creation of a package of important solutions for common problems encountered while successfully dealing with various types of themes for problem solution. Although more details are described in (4) Principal Themes for Problem Solving, it is essential to continue to develop similar packages of solutions based on many more actual approaches.

For example, in the sewing industry which is a priority industry in Ethiopia, it is important to introduce the practice of cell production based on multi-skill development and multi-process handling, typically represented by the cell production system, in addition to the line balancing approach to further improve the quality, cost and delivery (QCD).

In the case of TPM of which the full-scale application has commenced at a sugar plant, the further packaging of solutions based on industry-specific application caes should produce a more positive outcome.

② Mechanism to continually produce core personnel

For the development of core personnel through training, the functioning of a mechanism designed to continually produce human resoures of a certain level at the EKI is essential. In other words, it is necessary for the EKI to develop the capability of EKI consultants without the existence of Japanese experts while safeguarding the quality of training through its own efforts.

While a coordinator should preferably have the rank of “S” or “A” in Table 12, no EKI consultants have yet reached either rank. Meanwhile, a trainer should preferably have the rank of “A” or “B”. However, only four EKI consultants reached such rank and three have already

left the EKI. The slow progress of the development of core personnel can be primarily attributed to the lack of the necessary manpower input to the proposed cascade-type human resources development by the JET to the EKI at the beginning of the Project.

Apart from the MSc course in KAIZEN, there are no plans to further enhance the capability of the EKI consultants trained under the Project. Human resources development should be long-term as well as systematic rather than being transient. It is, therefore, desirable for the EKI to design and implement a human resources development plan to secure consultants whose problem solving capability is ranked "B" or higher in Table 12.

③ Capacity building through routine work and training under the Project (from the viewpoint of continuity)

It appears tht the EKI considers that the training under the Project constitutes the "consumption" of human resources and time and that the routine work of its directorates constitutes "outputs". Consequently, there was a period when the EKI prioritised its own routine work while being reluctant to dispatch trainers to the training under the Project. In reality, as training takes place at the production floor, it should be considered an "output". Unless the routine work has an element of training, neither the further development of consultants nor a high quality consulting service in the future can be expected to materialise.

In the case of the fifth batch training for EKI consultants, as all of the trainees work at the Textile/Leather, Agro, Metal or Chemical Directorates of the EKI, they cannot be said to represent the enitre EKI. Nevertheless, these trainees can be expected to share successful cases of KAIZEN and newly introduced KAIZEN systems/techniques/tools beyond the boundaries of their own directors through their training opportunities. The ideal state is the accumulation of successful cases of KAIZEN by the EKI through the sharing of information on individual consultation cases which are added to the KAIZEN maual.

④ Human aspect of KAIZEN

For the promotion and dissemination of KAIZEN, the human aspect is important in addition to the technical, theoretical and application aspects of KAIZEN.

Here, matters which have not been properly defined so far and which relate to the human aspect of KAIZEN to be learned by the EKI consultants during the ICT are described as they emerged in the course of the training.

・ Establishment of a mutually beneficial relationship of trust with enterprises

The EKI consultants consider themselves teachers for the application of KAIZEN to enterprises. From the viewpoint of enterprises, however, discussion meeting with a consultant is time-consuming and eats up working time. Moreover, the home work

given by a consultant gives the employees of a subject enterprises the impression of an extra work burden, making them reluctant to implement KAIZEN.

As emphasised by the JET members to the EKI consultants at every opporunity, it is essential for a consultant to approach an enterprise with an attitude of "working together and learning together to achieve positive results". In the face of such an attitude on the part of a consultant, an enterprise is more likely to understand the meaning of implementing KAIZEN (that KAIZEN is advantageous for the business) and to establish a relationship of trust. This situation creates the virtuous cycle of high quality consulting and positive outcomes of the implementation of KAIZEN.

- Motivation based on a belief in the inherent goodness of mankind

  The owner or senior management personnel of many enterprises tend not to be directly involved in activities at the production floor and have little interest in or expectations of workers. This situation leads to poor motivation among workers to rigorously implement KAIZEN. Top management personnel should treat workers as people of integrity with a desire for self-fulfillment instead of simply lazy people. Strong interest in the production floor and acknowledgement of a positive production performance increase the motivation of workers to implement KAIZEN. Throughout the project period, the Japanese experts consistently recommended that enterprise owners visit the production floor and acknowledge and commend the efforts of their workers. One condition for a good consultant is careful observation of the production floor and the ability to find and complement the positive outcomes of KAIZEN before giving any explanations by workers. The same applies to EKI Consultants. Respect for and complementing the efforts of workers can lead to the continuation of their KAIZEN efforts.

(3) Introduction of Skill Evaluation to the EKI Consultant Evaluation System

For the skill evaluation originally designed to be conducted at four stages (A: pre-CRT evaluation; B: CRT evaluation; C: ICT evaluation; D: consulting practice), the evaluation criteria and methodology were developed to verify the effectiveness of the skill evaluation system.

For evaluation exercises A and B, the relevant evaluation method was established whereby the same test was repeated before and after CRT to assess the level of understanding based on the differences in the scores (see Table 9 for the relevant evaluation results).

For evaluation exercises C and D, the established method to evaluate any development of the practical abilities of the trainees through ICT to apply KAIZEN techniques is to compare the self-evaluation scores of the trainees before and after the ICT and the scores recorded by the Japanese experts at the end of the ICT based on their observation of 12 relevant abilities, etc.

(observation sill, ability to find muda, logical and QC-oriented thinking, problem solving skills, intuition, KAIZEN application skill, leadership, ability to pose questions, ability to communicate, ability to manage a project, coaching skill and ability to resolve difficulties). In regard to evaluation exercise D in particular, the established method also involves evaluation of the transition of the level of the trainees' 12 abilities by comparing changes of the self-evaluation scores of the trainees some four months after the completion of the ICT (see Table 11 for the relevant evaluation results).

While evaluation exercises A and B mainly feature the theoretical aspect, evaluation exercises C and D aim at assessing the ability to apply KAIZEN skills. All of them, however, are subjective and qualitative approaches. To rectify this shortcoming, new evaluation criteria have been established to evaluate the maturity level of skills while taking the lengthy time required for skill development by EKI consultants into consideration.

Table 12 shows the evaluation results when these new criteria were used to evaluate all former trainees under the Project. The EKI does have its own performance evaluation system based on BSC. The pay grade, etc. of its employees is decided using the performance evaluation results although the actual pay grade, etc. does not necessary match the evaluation results.

It is hoped that the evaluation method tried under the Project will be further elaborated to develop an evaluation and grading system for EKI consultants based on the level of skill and experience so that such an improved level of EKI consultants is fully recognised both inside and outside the EKI, eventually resulting in the establishment of an official qualification system in the future.

(4) Principal Themes for Problem Solving

Through the ICT, it was found that Ethiopian enterprises face some common problems. A standard solution package was developed for each problem to streamline the handling of these common problems.

1) Standard Operation Procedure (SOP)

Many Ethiopian enterprises do not have a well established mechanism and rules for their operation. To rectify this, a standard mechanism was developed for a minimum level of documentation clearly specifying the rules to secure the required quality of production processes. This mechanism was adoptd by many ICT enterprises after its finalisation in the second batch training period.

2) Preventive Maintenance (PM)

Many Ethiopian enterprises do not conduct route maintenance work for many machines, resulting in their eventual breakdown. In many cases, these broken-down machines are left unrepaired. A compact maintenance system was developed under the Project to prevent machine failures by

means of implementing systematic maintenance activities involving shop workers in order to improve the production efficiency. This system was adopted by Addis Ababa Tannery in the third batch ICT and ZAK in the fourth batch ICT.

3) Productivity and Delivery Time Improvement Method for Belt Conveyor-Based Production

The textile and leather industries are priority sectors in Ethiopia. These industries are labour intensive and use belt conveyors fo rproduction. Productivity improvement in the case of belt conveyor-based production requires the identification and solving of any bottlenecks. At Peacock Shoes in the second batch ICT, a procedure to elimiante bottlenecks using the line balancing method was established. This method was the most frequently used in subsequent ICT.

(5) Follow-Up Survey with Host Enterprises of ICT

Prior to the commencement of the fourth batch training, eight enterprises were selected from among 34 host enterprises of the first through third batch ICT for a follow-up survey on the post-ICT KAIZEN implementation situation. The survey results are shown in Table 13.

Table 13: Outline of Follow-Up Survey Results for Host Enterprises of ICT in the Past

Batch	Enterprise	Type of Business	Theme for Problem Solving in ICT	Post-ICT Situation
1	Excel Plastics	Resin moulding	Shortening of the set-up time	The relevant activity was temporarily suspended after the ICT but subsequent follow-up guidance was provided by the EKI. A KAIZEN officer has been employed to spearhead small group activities.
1	Pasqua Giuseppe	Manufacture of transport equipment	Shortening of the delivery time	Shortening of the delivery time was achieved in the ICT (from 12 days to 8 days) and post-ICT activities further shortened the time to 5 days. The same method has been applied to other products (Agricultural machinery). Monday, the day on which a visit was made during the ICT, have been designated KAIZEN days. This practice has continued along with the introduction of safety days.
2	Kotabe Metal	Manufacture of agricultural machinery and tools	SOP; quality assurance system	During the ICT, a standard document system was established to consolidate the foundations for quality and productivity improvement. A mechanism to make the products reflect customer needs was subsequently developed through the systematisation of quality assurance. Active product development efforts have reached a new stage where new products based on new concepts are now produced.
2	Peacock Shoes	Manufacture of shoes	Productivity improvement through line balancing	Although the ICT theme (elimination of bottlenecks in the shoe manufacturing process) is no longer pursued, small group activities (KPT) are in progress. A KAIZEN officer has been employed and follow-up guidance by the EKI has been provided.

Batch	Enterprise	Type of Business	Theme for Problem Solving in ICT	Post-ICT Situation
2	Sabahar	Textile	Visit to an enterprise with small group activities	The ICT theme (work improvement with QCC) has been continually pursued and the idea of KAIZEN is now rooted at the shopfloor.
3	DH Goda Blankets	Manufacture of blankets	SOP; quality assurance system; quality and productivity improvement	A variety of KAIZEN activities are practiced based on SOP, significantly transforming the workplace. KAIZEN activities have been extended to various shopfloors and the working atmosphere is vibrant.
3	Euro Cable	Manufacture of cables	SOP; quality assurance system; quality and productivity improvement	The improved productivity through ICT has inspired strong confidence. Post-ICT visit have confirmed that KAIZEN activities have vigorously continued.
3	Educational Materials Distribution and Products	Manufacture of furniture	SOP; quality assurance system; quality and productivity improvement	ICT provided the momentum for the "visualisation" of quality and productivity and KAIZEN proceeded with the development of simple jigs and tools. The department in which the ICT took place has become a showroom for other departments to adopt KAIZEN activities.

Although one of the enterprises listed in Table 13 experienced a temporary stagnation of KAIZEN activities, all of the enterprises have continued their KAIZEN activities up to today with or without follow-up guidance by the EKI. The fact that KAIZEN activities have become more vigorous in the post-ICT period at some enterprises is a very positive outcome of the ICT.

(6) Development of a KAIZEN Manual

The KAIZEN manual developed under the Project consists of two parts. Part 1 covers theories and reflects the final version of the CRT curriculum. Part 2 is a collection of actual cases of problem solving and reflects the outcomes and achievements of the ICT. In particular, Part 2 focuses on concrete cases of problem solving, providing practical processes to solve various problems using basic KAIZEN techniques/tools.

(7) Direction for Further Development of EKI Consultants (In Pursuit of Advanced KAIZEN)

The history of the transfer of KAIZEN skills under the Project suggests that the target EKI consultants have built up their knowledge and consulting experience regarding the 5S and reduction (elimination) of muda and are now capable of conducting consultations with confidence. However, there is a tendency to emphasise theoretical guidance and the consultants have not yet reached the stage of gathering all kinds of vital information through their five senses and correctly interpreting this information to make appropriate judgements. KAIZEN is a practical science which is born and grows through its actual application. The detection of problems through careful observation of actual production practices is essential. While the accumulation of experience over time is the only way for EKI consultants to achieve a satisfactory level, the realisation and sharing of the importance of a field-oriented approach by

every stakeholder is essential. For the purpose of problem solving, a systematic approach must be pursued to enhance the competitiveness of the enterprises in question through the identification of long-term and structural problems and tasks. To achieve this goal, it is essential for EKI consultants to accumulate cases of successful consultation even if the subject matters are small in order to develop their sensibility of structural problems.

(8) Others

Appendix 8 of this report lists the 47 host enterprises for the first through fourth batch ICT for EKI consultants. The list includes simple evaluation results of the Japanese experts from the dual viewpoint of (i) the 5S and reduction of muda and (ii) problem solving.

5.3 Activities Related to Output 3

The transfer of KAIZEN techniques/tools to TTTs via their training under the Project can be described in terms of two aspects. The first is the actual contents of this transfer. To be more precise, the subject matters for transfer were the theories behind KAIZEN techniques/tools and the ability to apply or provide guidance on KAIZEN techniques/tools. The reason for dividing the theories from application/guidance ability is that there is a much larger gap than is commonly imagined between the understanding of theories and the mastering of application/guidance ability. Separate discussions on these two issues can clarify problems relating to the transfer of KAIZEN techniques/tools. The second is the different between the subject techniques/tools for transfer depending on the target persons, etc., i.e. either TTTs or EKI consultants. The reason for describing the transfer of KAIZEN techniques/tools to EKI consultants in relation to Output 3 despite the lack of a relevant rference in the PDM is that the transfer of certain KAIZEN techniques/tools to EKI consultants is essential for their performance as trainers.

Four issues are discussed next as these issues can be approached from the above-mentioned two aspects.

Table 14: Four Types of Transfer of Techniques Based on Differences in Terms of Targets and Contents

		Differences in Terms of Target Persons	
		TTTs	EKI Consultants
Theories or Application/ Guidance Abilities	Theories (CRT)	1) Transfer of theories to TTTs	3) Transfer of theories to EKI consultants
	Application/ Guidance Activities	2) Transfer of applicaton ability to TTTs	4) Transfer of application/ guidance abilities to EKI consultants
Human Aspect of KAIZEN		5) Transfer of theories and application ability relating to the human aspect of KAIZEN techniques/ tools	

Reflective analysis of the activities to transfer KAIZEN techniques/tools under the Project has been conducted and the lessons learned from such analysis are described next to help improve similar training in the future.

(1) Transfer of KAIZEN Techniques and Theories to TTTs

The first two batches of the transfer of KAIZEN theories to TTTs (TTTs training) were conducted by Japanese experts while the third to fifth batch training was jointly conducted by Japanese experts and EKI consultants. The latest sixth to eighth batch training have been conducted solely by EKI consultants.

1) Transfer of KAIZEN Techniques and Theories to TTTs in CRT

The CRT curriculum used for the training of TTTs is shown in Table 15. In reflection of some of the ICT results, "How to use a KAIZEN board" and "QC circle activities" were added after the commencement of the training. Because "QC story" which is a simplified version of "consulting procedure" provided a better scenario for use in the ICT, "consulting procedure" was later replaced by "QC story".

Table 15: CRT Curriculum for Training of TTTs

	Curriculum	
	First Batch	Eighth Batch
KAIZEN Basics	What is KAIZEN; 5S; 7 QC tools; why-why analysis; standardisation; problems by plant type	"How to use a KAIZEN board" was added to those listed in the left-hand column.
IE Basics	IE basics; time study; motion study; work sampling; line balance; plant layout	
Quality Management	Control charts	Because of the necessity in the ICT, the subject of "control charts" was replaced by "QC basics" in the middle of the course. The new subject of "QC circle activities" was added.
How to Proceed with Consulting	Consulting procedure	The subject of "consulting procedure" was revised to "QC story".

In order to ascertain any progress of the understanding of TTTs of KAIZEN between pre-CRT and post-CRT, a pre-CRT test and post-CRT test were conducted. In the case of the latter, the number of questions was increased by nearly five times compared to the pre-CRT test although the subject matters were based on those of the pre-CRT test. The test results show that the TTTs scored 0 to 35 points out of 100 in the pre-CRT test on knowledge of KAIZEN. The number of test questions was 20 for the first batch TTTs but was later increased to 25. In the case of those questions to which the proportion of TTTs answering correctly was extremely low, the wording was changed to facilitate a better understanding or the questions were replaced by simpler questions. Because of these changes, the tests for the different batches were not exactly the same, making their comparison inappropriate. However, it is not wrong to draw a general tendency

from the test results. A difference in the score between the pre-CRT and post-CRT tests indicates an improved understanding of KAIZEN as a result of the CRT.

Table 16 shows the post-CRT test results. As the number of questions varied from one batch to another, the scores for each batch are converted to their relative values in relation to a full score of 100 points. In regard to those subjects which were newly added, the relevant questions were not prepared in time. Consequently, the post-CRT test did not feature these subjects.

Table 16: Post-CRT Test Results by Batch

	1	2	3	4	5	6	7
What is KAIZEN?	57.5	55.8	53.3	57.8	61.6	80.5	80.3
5S					53.6	48.0	84.0
7 Tools of QC	36.5	47.8	46.1	?	46.0	44.3	43.3
Why-Why Analysis					-	-	-
Standardization	55.0	53.1	43.0	?	50.0	?	76.3
Problems by Plant Type					52.5	-	-
IE Basics	61.3	68.0	58.4	60.0	67.2	60.3	64.6
Motion Study	52.3	63.5	50.9	52.4	57.2	63.0	65.0
Time Study	54.0	68.4	59.9	61.2	61.2	60.3	74.3
Plant Layout	69.0	67.5	49.6	49.8	52.2	-	72.0
Line Balance					70.0	-	-
Control Charts⋆	43.1	64.1	66.7	64.8	-	48.8	-
Work Sampling⋆⋆					70.0	57.3	70.9
Consulting Procedure⋆⋆⋆	46.8	67.7	44.9	36.1	45.4	-	-
Average Score	52.8	61.8	52.5	54.6	57.5	57.8	70.7

* This subject was changed to “QC Circle” from the second batch onwards.
** This subject was introduced in the fifth batch.
*** This subject was changed to “QC Story” from the second batch onwards.
- No test was conducted on the subject.
? Although a test was conducted, the test result data has been lost.

The test results appear to indicate an increasingly better performance as the training progressed from the first batch to later batches. The seventh batch in particular shows a sudden increase of the test scores. However, the matter is not that simple because of the different levels of difficulty of the post-CRT test for different batches. The transfer outcomes are determined by the level of difficulty of the subjects to be transferrd and level of lecturing skill as shown in Fig. 2.

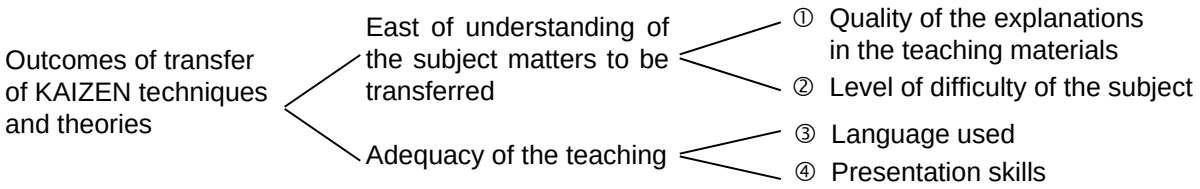


Fig. 2: Factors Affecting the Outcome of the Transfer of KAIZEN Techniques and Theories

The ease of understanding was lowered in the case of later batches as the EKI consultants in charge revised the contents of the teaching materials originally prepared by the Japanese experts. These revisions were made in the following two ways.

① Change of the presentations by the addition of video clips and illustrations to make the teaching materials prepared by the Japanese experts easier to understand

② Limited change of certain parts of the teaching materials within the range where the EKI consultants themselves could fully understand and confidently explain the contents of the subject in question

The EKI consultants engaged in the CRT were three KU members and three new consultants recruited by the EKI in 2013. All three of the new recruits had studied IE at university and were particularly confident lecturing on IE. The changes made to the teaching materials by these three new recruits mainly measured the presentation methods (① above). In contrast, the changes made by the KU members who did not have a full range of knowledge of IE could be classified into both categories, i.e. ① and ② above. In regard to the leel of the teaching materials prior to these changes, the Japanese experts were confident about their validity even after the completion of the entire training schedule. Such validity is, in fact, indirectly proved due to the differences between the changes made to the teaching materials by the three new recruits and those by the KU members. The three new recruits who had studied IE at university went beyond simple changes of the teaching materials to make them easier to teach and also to understand. In addition to such changes, they incorporated video clips, etc. to make the contents of the teaching materials easier to understand for the trainees, culminating in better post-CRT test results.

The adequacy of the teaching is determined by the language used for teaching and the presentation skills of the lecturer. While the Japanese experts used English, the EKI consultants used Amharic. In general, the lectures in Amharic were much better understood by the trainees. As far as the presentation skills are concerned, the EKI consultants were found to be better than the Japanese experts.

The degree of impact of each of the four factors shown in Fig. 2 on improvement of the test results was qualitatively evaluated and the results are given below where more + symbols ndicate a greater degree of impact.

① Change of the mode of explanation of the teaching materials: +
② Change of the contents of the teaching materials to make them easier to understand: ++
③ Lectures in Amharic: +++
④ Presentation skills: ++

Based on the above analysis results, the following lessons have been learned to further enhance the KAIZEN technique and theory transfer results.

- When individual KAIZEN techniques/tools are transferred to EKI consultants, the Japanese experts must check the level of understanding of the subjects on the part of the EKI consultants and take time to explain anything where the level of understanding is found to be low.
- Any revision of the teaching materials/textbooks should only proceed after close discussions.

Although these two requirements were met at the beginning, they were less observed at the later batches because of increasing time constraints. Fulfilling these two requirements requires much time. For example, 7 - 8 hours should be set aside to meet these requirements for the transfer of one KAIZEN technique/tool.

2) Transfer of KAIZEN Application Skills to TTTs Through ICT

ICT is implemented for TTTs to learn how to apply the KAIZEN techniques and theories which they learned during the CRT to proceed with actual KAIZEN activities. Several training groups were formed dring each batch of ICT with each group consisting of 5 TTTs, 5 host enterprises and one trainer. In principle, each TTT was responsible for one host enterprise. When the TTTs visited a host enterprise which was not their principal responsibility, the work was divided between the TTTs for analysis of the target production floor with the instruction of the TTT principally responsible for the enterprise concerned. Through this process, all five TTTs were able to develop their KAIZEN technique and theory application skills through field experience at five host enterprises. Fig. 3 shows the evaluation results of not only the ability of the TTTs to apply KAIZEN theories but also the five components (observation skill, problem analysis skill, solution planning skill, persuasiveness and leadership) of technical competency required to disseminate KAIZEN to enterprises. The actual ability to apply KAIZEN techniques and theories is underpinned by observation skill, problem analysis skill and solution planning skill.

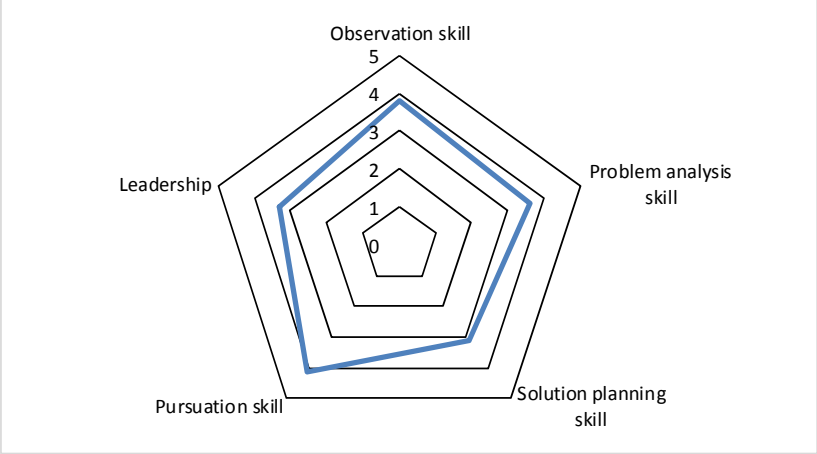


Fig. 3: KAIZEN Competency of TTTs during ICT (5 = Excellent; 1 = Poor)

The evaluation results of the KAIZEN competency of the TTTs shown in Fig. 3 match the feeling of the Japanese experts who accompanied them to many of the host enterprises of the ICT. In short, the TTTs observed the target production floor in detail and well remembered such details. Many of them were quite persuasive when they suggest the introduction of a draft KAIZEN plan to the top management. However, their solution planning skill is less developed and many of the TTTs struggled to lead the other four TTTs at the enterprise for which he/she was responsible.

Apart from the evaluation results shown in Fig. 3, there was a matter about which the Japanese experts felt strongly when accompanying the TTTs during the ICT. This was the inability of the TTTs to apply the KAIZEN techniques which they had learned during the CRT to the actual conditions in a flexible and adequate manner. In other words, there was a large gap between their knowledge acquired during the CRT and their ability to apply this knowledge during the ICT. Even when those TTTs who had achieved a good score in the post-CRT test were asked "What are the problems at this plant" when visiting a plant for the first time, a typical answer was simply "The production floor is in disarray" without any further elaboration. When the existence of many types of muda was pointed out, their response was often based on their gut feeling. When asked about "a possible analytical method to quantify muda", they often failed to answer. There appear to be three reasons for this situation.

① There is a problem of linkage between the CRT and ICT. To be more precise, sufficient consideration was not given to effectively linking the CRT with the ICT.

② When various KAIZEN techniques, etc. were transferred during the CRT, important checkpoints which would constitute the wisdom or assets of a consultant were not properly taught. Some examples of such checkpoints are (i) a process where partly finished products are piled up constitutes a bottleneck, (ii) a plant with a wide distance between machinery has a high level of muda in terms of transportation and (iii) a plant where tools are left on the floor instead of being tidily stacked on shelves produces much muda in terms of finding the required tools.

③ The technique to infer a problem based on a single symptom was not taught during the CRT.

An excellent consultant can hypothesise a problem and its cause(s) based on the observation of several symptoms. This is followed by further observation and measuring to verify such hypothesis for analysis of the current situation. He/she can instantly decide on a KAIZEN technique for such analysis and tries to apply such technique. In general, the process of KAIZEN is said to proceed from theidentification of a problem causing analysis, planning of a solution and implementation of the solution. A capable consultant makes a hypothesis at key points as shown in Fig. 4 and this ability to hypothesise plays a critical role in consulting.[3]

[3] For example, Management Consulting (4th Edition edited by Milan Kubr and ILO and published in December, 2005) states that diagnostic work should start with a clear conceptual framework in mind. Engagement in a

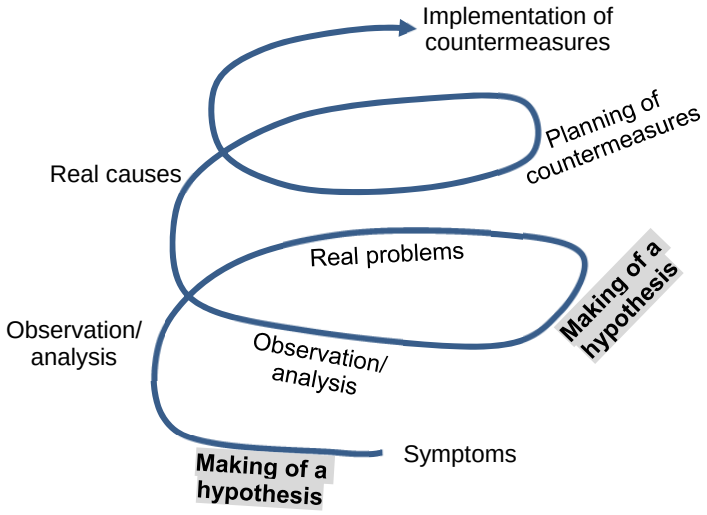


Fig. 4: Introduction of Hypotheses in Consulting

Even if it is difficult for TTTs to acquire the required competency of a consultant in a short period of time, the following lessons can be learned from past experience.

- A style of training designed to make TTTs come up with answers is preferable to a trainer just telling them the answers.
- It is preferable to each how to make a hypothesis during both CRT and ICT.
- To establish an effective link between CRT and ICT, it is preferable to create opportunities for TTTs to find a viable approach to KAIZEN through the introduction of concrete cases encountered in past ICT and the subsequent analysis of and discussions on these cases at three stages, i.e. individual level, small group level and entire TTTs at the batch level. In other words, the case method technique should be introdued at the later part of CRT.

(2) Transfer of Skills to EKI Consultants

The transfer of skills to EKI consultants here means that not only the straight-forward transfer of KAIZEN techniques but also skills to transfer KAIZEN techniques, theories and their application methods for TTTs. The performance of EKI consultants as trainers for TTTs training is a precondition for the successful continuation of training to foster capable TTTs. In this context, the transfer of skills to conduct proper guidance on the application of KAIZEN techniques, etc. to EKI consultants along with the transfer of KAIZEN techniques and theories proper is essential even if such skill transfer is not mentioned in the PDM. In consideration of the importance of such precondition, the JET conducted the transfer of skills accordingly.

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large-scale study with a huge cost with such a framework is unproductive. The conceptual framework referred to here can be replaced by a hypothesis. Koichi Hori, former president of Boston Consulting Group, writes in his book “What is consulting?” (Published by PHP in May, 2011 in Japanese) that what is necessary to extract that maximum volume of information in a limited time is the establishment of a “hypothesis” about “what is the problem?”.

1) Transfer of KAIZEN Techniques and Theories to EKI Consultants Through CRT

As already described in (1) Transfer of KAIZEN Techniques and Theories to TTTs, the EKI consultants acting as trainers for the TTTs training were three KU members and three new consultants recruited by the EKI in 2013. While the time to transfer KAIZEN techniques and theories to them was originally set aside, this transfer did not sufficiently take place from the fourth batch onwards due to a decreased number of days for the Japanese experts to participate in the training. The lessons learned from this process are described below.

- A long time should be spent to transfer KAIZEN techniques, etc. to the EKI consultants during the CRT. At least one full day should be provided for each subject for transfer.
- It is undesirable for the EKI consultants to include those subjects at which they are not good in the training curriculum for TTTs. It is a good idea to determine the level of teaching competency of individual EKI consultants for each subject and the Japanese experts should provide personalised guidance on such subjects. If there is no time for such personalised guidance, a mechanism for mutual learning between EKI consultants could be created to enhance the abilities of the EKI consultants. However, as the KU members are likely to be reluctant to learn IE from the three new recruits, measures to overcome their reluctance should be developed.
- Trainers for individual subjects should be flexible so that all of the EKI consultants in charge of CRT for TTTs can develop the capability to teach all subjects in a reasonably competent manner.

2) Transfer of Skills to Apply and Provide Guidance on KAIZEN Techniques, etc. to EKI Consultants in CRT

Through the ICT, the EKI consultants acting as trainers led the transfer of KAIZEN techniques, etc. to the TTTs and host enterprises for the ICT. The KAIZEN themes featured in the ICT are shown in Fig. 5 (multiple counting for a series of batches).

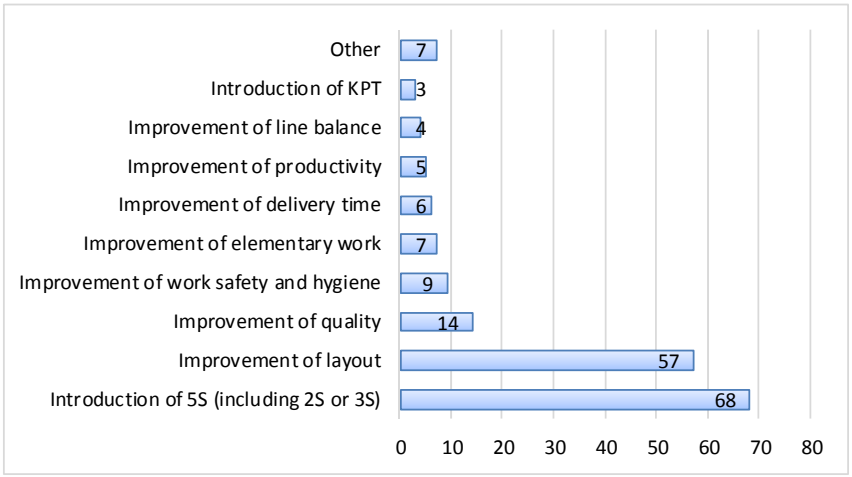

Fig. 5: KAIZEN Featured in ICT

As clearly shown in Fig. 5, the KAIZEN techniques applied by the TTTs in the ICT with the guidance of the EKI consultants were predominantly the introduction of the 5S and layout improvement, indicating the narrow range of KAIZEN learning by the TTTs in the ICT. The ICT is designed to make each TTT experience KAIZEN not only at the enterprise for which he/she is responsible but also at the four other enterprises supervised by the other four TTTs in the same group. Provided that two different KAIZEN themes are selected at each enterprise, each TTT should experience 10 different KAIZEN themes using a variety of KAIZEN techniques. In this way, the JET expected that the TTTs would experience wide-ranging KAIZEN activities.

In the end, however, it must be said that there is a large gap between the CRT and ICT as many of the TTTs have been unable to practice many of the KAIZEN techniques during the ICT which were taught during the CRT.

There are severl possible reasons for this large gap as listed below.

① The host enterprises tend to be selected from among a small number of industries (enterprises in the woodworking, metal/woodworking and metal processing industries account for 84% of the total). As enterprises in the same industry tend to have common problems, the KAIZEN techniques to solve the problems tend to be the same.

② The problems discovered tend to be those typical to MSEs. For example, the production floor of most of the plants involved is chaotic as the low control standard means the non-existence of the basic 2S let alone the entire 5S.

③ The duration of the ICT of two months is long enough to implement certain KAIZEN themes, such as the 5S, to produce tangible results. However, it is to short to ascertain positive results when dealing with such KAIZEN themes as the reduction of defective products and productivity improvement. Because of this, some TTTs and trainers adopt the short-sighted approach of making visible achievements within the time limit.

④ As the three KU members are not IE specialists, they have a tendency to avoid such KAIZEN themes as quality improvement and productivity improvement.

Because of the above-listed reasons, the transfer of the skills to apply and provide guidance on KAIZEN techniques, etc. to the EKI consultants during the ICT was found to be more difficult than the simple transfer of KAIZEN techniques during the CRT.

Moreover, when the transfer of KAIZEN techniques to TTTs through actual practice duirng ICT is intended, the traineeds need to lead the TTTs to a certain level at an early stage of the ICT. Ideally, they should take a back seat when the direction of KAIZEN has become fairly apparent in order to respect the own initiative of the TTTs so that the latter can acquire the skills to

transfer KAIZEN techniques through their own guidance activities. What was frequently observed during the ICT was trainers who decided how to proceed with KAIZEN activities when dealing with his/her own specialist theme while treating the TTTs as assistants to implement his/her instructions. There were cases of trainers preparing the presentation materials to report the ICT results to the enterprise involved with little involvement of the TTTs. While the Japanese experts did organize sessions to lecture the EKI consultants on coaching techniques to guide TTTs during the ICT, these sessions proved to be insufficient.

One important lesson learned here is that it is necessary to emphasise the training of trainers on coaching (guidance) skills equally or more than emphasise on the transfer of KAIZEN techniques and theories.

(3) Achievements Related to Transfer of KAIZEN Techniques to TTTs and EKI Consultants and Pending Issues

1) Transfer of KAIZEN Techniques, etc. to TTTs

Almost all of the TTTs involved in the ICT conducted lectures on the concept of KAIZEN and the 5S at those enterprises for which they were principally responsible. Having attended such lectures dozens of times, the Japanese experts can honestly say that many of the TTTs, who are actually teachers, have good teaching skills. Some 30% of the TTTs went further than simple teaching by pointing out problematic areas of plant operation and giving lectures using actual raw materials, tools and other items relevant to production.

The follow-up survey on the post-training KAIZEN dissemination activities of former trainee TTTs found a higher level of activities than anticipated. These activities include (i) thet raining of co-teachers and students at their own schools, (ii) the strict application of the 5S to educational equipment used in lessons on practical skills and their storage space and (iii) the dissemination of KAIZEN to enterprises operating nearby their schools.

It can be concluded that the TTTs trained under the Project have reached the stage where they can not only lecture but also provide practical guidance on such themes as the 5S and plant layout improvement.

One pending issues for TTTs is the development of the ability to provide practical guidance in the field on such themes as quality improvement and productivity improvement beyond such simple themes as the 5S and plant layout improvement. To develop such ability, it is necessary to continue the capacity building of TTTs, including the provision of case studies by the EKI in lieu of practical training to create training opportunities for TTTs.

2) Transfer of KAIZEN Techniques, etc. to EKI Consultants

The EKI consultants acting as trainers have, on average, acquired the ability to teach at least three subjects of the 15 subjects dealt with by the CRT. In regard to the ICT, they have reached the stage of being almost totally capable of providing guidance on the 5S, plant layout improvement and the elimination of simple muda. In addition, the three new recruits have also reached the level of being able to each productivity KAIZEN to a certain extent. All of the trainer EKI consultants have become capable of conducting ICT along with a QC story and the KU members in particular have become skilled in managing a training course.

The principal pending issue for these EKI consultants is the acquisition of a level of knowledge which allows them to deliver lectures on all subjects through their own efforts to tackle unfamiliar subjects. The KU members in particular should consciously improve their knowledge and teaching skills relating to IE and QC as these have been proven to be unfamiliar subjects for them. Both the KU members and new recruits should develop their ability to apply such basic KAIZEN techniques/tools as the 7 tools of QC while mastering more advanced knowledge and techniques regarding KAIZEN.

(4) Others

Appendix 9 lists the 129 enterprises involved in the first through eighth batches of ICT for TTTs. The list is also accompanied by the KAIZEN activities introduced at individual enterprises and the simple evaluation results of these activities by the Japanese experts (see Appendix 9: List of Host Enterprises for ICT for TTTs).

6. Outline and Achievements of Subcontracted Work

6.1 Impact Survey

An impact survey was conducted to measure the effects of the KAIZEN activities introduced to the host enterprises for ICT. This survey was subcontracted to the Ethiopia Development Research Institute (EDRI).

6.1.1 Survey Method

The impact survey actually consisted of a baseline survey (before ICT) and follow-up survey (after ICT) conducted by researchers employed by the EDRI in the form of an interview survey using a questionnaire at both the host and non-host LMEs and MSEs for ICT. In this chapter, the host enterprises for ICT (also called ICT companies or participants) constitute the treatment group while non-host enterprises (also called non-ICT companies or non-participants) constitute the control group.

Firstly, a baseline survey was conducted with all of the enterprises on the candidate list prepared by the EKI. In contrast, a follow-up survey was conducted with the ICT companies selected by the EKI

and JET based on the preliminary survey results and non-ICT companies. However, as neither ICT companies nor non-ICT companies were randomly extracted, the collected data underwent statistical treatment to analyse if any significant differences still emerged after this treatment.

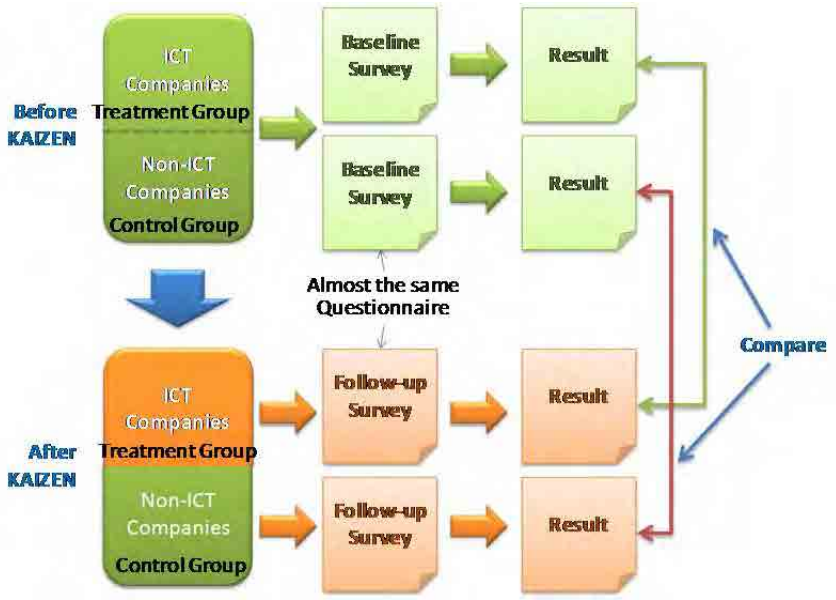

Fig. 6: Conceptual Diagramme of the Impact Survey

6.1.2 Selection Method of Target Enterprises for Impact Survey

The original lists featuring the possible target enterprises for the baseline survey and follow-up survey were prepared by the EKI. The basis for the list of LMEs was lists of enterprises kept by individual industrial development institutes and list of enterprises kept by the Ethiopia Investment Agency (EIA) for LMEs. In the case of MSEs, the lists of enterprises kept by the FeMSEDA and ReMSEDAs were used as the main sources of information.

Because the LME and MSE ICT companies were to be selected from among those on the respective lists, a preliminary survey was conducted with a number of enterprises on the lists (approximately double the planned number of be selected for ICT) before the training of each batch.

To be more precise, representatives of the EKI and JET visited each candidate enterprise and finally selected the companies for ICT based on the preliminary survey findings in related to the ICT company selection criteria set forth in the Work Plan, relevant knowledge of the JET members and purpose of the training (areas of emphasis for the transfer of KAIZEN techniques for each batch).

Non-ICT companies were those which were on the list but not selected as a result of the preliminary survey. The number of ICT companies and non-ICT companies is shown in Table 17.

Table 17: Number of Enterprises Surveyed

	Total	ICT Companies <Treatment Group> * Figures in brackets are the number of enterprises participating in the KAIZEN guidance by TVETIs.	Non-ICT Companies <Control Group> * Figures in brackets are the number of enterprises which have since ceased operation.
LMEs	118	47	71 (9)
MSEs	107	57 (13)	50 (11)

The surveyed MSEs include those participating in KAIZEN activities led by TVETIs which were taking place at the time. Although the KAIZEN guidance by the TVETIs was inadequate compared to the training under the Project, detailed analysis of the preliminary survey findings suggests that the outcomes of such guidance could produce similar results to those of the training under the Project. It was, therefore, decided to classify those enterprises receiving KAIZEN guidance by TVETIs as ICT companies in the report produced by the EDRI. No enterprises were found to have received KAIZEN guidance from both providers, i.e. a TVETI and the Project.

6.1.3 Interview Survey

In regard to the interview survey using a questionnaire, the replies of the interviewees were entered on a questionnaire sheet by the researchers to ensure data accuracy as much as possible. The target persons for interview were management-class personnel. In principle, the same questionnaire was used for LMEs, MSEs, baseline survey and follow-up survey with some ICT-related questions added to the follow-up survey. For the preparation of the questionnaire, editorial supervision was requested to Professor Sonobe of the GRIPS (currently Vice-President of the GRIPS) and the questionnaire was prepared through a series of discussions featuring not only the desirable questions but also the implementation method as well as timing of the survey. Once the outline of the questions to be asked became clear, the opinions of those JET members in charge of KAIZEN training at LMEs and MSEs were sought with a view to the finalised questions reflecting their opinions. See Appendix 10: Questionnaire Used for the Impact Survey for the questionnaires targeting LMEs and MSEs in the baseline survey and follow-up survey.

The researchers used had previous experience of conducting interview surveys and also underwent training on how to conduct the survey through mock interviews. In principle, the same researcher was involved in both the baseline survey and follow-up survey with the same enterprise. The baseline survey on LMEs involved six researchers, two controllers, one coordinator, one data checker and one data input operator while the follow-up survey involved six researchers (four were involved in the baseline survey) two controllers, one coordinator, one data checker and one data input operator. In the case of those surveys featuring MSEs, three researchers, one controller, one coordinator, one data checker and one data input operator were used for each survey. The reason for using so many researchers was the very short time available before the finalisation of the list of ICT companies and commencement of the ICT, making it essential to conduct the baseline survey in a short period of time

so that it could be completed before commencement. Other reasons were that the absence of a complete address system and poor transportation conditions in Ethiopia meant a long time was required to pinpoint the location of companies and that consideration of convenience of the appointment time for interviews for the target manager-class personnel made it difficult for a small number of researchers to visit many enterprises.

6.1.4 Survey Schedule

The survey schedule is shown in Table 18.

Table 18: Data Collection Schedule for Each Batch of LMEs and MSEs

<table>
<tr><th rowspan="2" colspan="2">Year/Month</th><th colspan="3">Large and Medium Enterprises (LMEs)</th><th colspan="3">Micro and Small Enterprises (MSEs)</th></tr>
<tr><th>Overall training schedule (# of surveys / participants)</th><th>Data collection for treatment group (# of sample)</th><th>Date collection for control group (# of sample)</th><th>Overall training schedule (# of surveys / participants)</th><th>Data collection for treatment group (# of sample)</th><th>Date collection for control group (# of sample)</th></tr>
<tr><td rowspan="12">2012</td><td>Feb</td><td colspan="6">Orientation and training to the survey team and pre-test of questionnaire</td></tr>
<tr><td>Mar</td><td rowspan="3"></td><td colspan="2" rowspan="3">Baseline</td><td rowspan="3">1st batch</td><td></td><td></td></tr>
<tr><td>Apr</td><td></td><td></td></tr>
<tr><td>May</td><td></td><td></td><td></td></tr>
<tr><td>Jun</td><td rowspan="5">1st batch
(9/9 LMEs)</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Jul</td><td></td><td></td><td rowspan="3">2nd batch</td><td></td><td></td></tr>
<tr><td>Aug</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Sep</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Oct</td><td></td><td></td><td></td><td>Baseline of 3rd</td><td>Baseline</td></tr>
<tr><td>Nov</td><td></td><td>Baseline of 2nd (2)</td><td></td><td rowspan="2">3rd batch
(14/15 MSEs)</td><td></td><td></td></tr>
<tr><td>Dec</td><td rowspan="4">2nd batch
(9/10 LMEs)</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="12">2013</td><td>Jan</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Feb</td><td></td><td></td><td></td><td>Baseline of 4th</td><td>Baseline</td></tr>
<tr><td>Mar</td><td>★Interim Report</td><td></td><td rowspan="2">4th batch
(10/10 MSEs)</td><td></td><td></td></tr>
<tr><td>Apr</td><td></td><td></td><td></td><td></td></tr>
<tr><td>May</td><td></td><td>Baseline of 3rd (12)</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Jun</td><td rowspan="7">3rd batch
(15/15 LMEs)</td><td></td><td></td><td></td><td>Baseline of 5th</td><td></td></tr>
<tr><td>Jul</td><td></td><td></td><td rowspan="2">5th batch
(16/23 MSEs)</td><td></td><td></td></tr>
<tr><td>Aug</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Sep</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Oct</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Nov</td><td></td><td></td><td rowspan="2">6th batch</td><td></td><td></td></tr>
<tr><td>Dec</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="12">2014</td><td>Jan</td><td></td><td>Baseline of 4th (12)</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Feb</td><td rowspan="6">4th batch
(13/13 LMEs)</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Mar</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Apr</td><td>Follow-up except 4th (33)</td><td>Follow-up (62)</td><td rowspan="2">7th batch</td><td>Follow-up of 3rd, 4th and 5th (51)</td><td>Follow-up (45)</td></tr>
<tr><td>May</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Jun</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Jul</td><td></td><td></td><td rowspan="2">8th batch</td><td></td><td></td></tr>
<tr><td>Aug</td><td></td><td>Follow-up of 4th (13)</td><td></td><td></td><td></td></tr>
<tr><td>Sep</td><td>5th batch</td><td>★Final Report (Final)</td><td></td><td></td><td>★Final Report (Final)</td><td></td></tr>
</table>

Supervision of the surveys by Professor Sonobe included not only guidance on the survey method and contents of the questionnaire at the commencement of the Project as mentioned earlier but also monitoring of the progress of the Project as well as the surveys through actual visits to the ICT companies during the project period and the provision of further advice and guidance on the data analysis method, etc. at the end of the field work for these surveys.

6.1.5 Survey Findings

Fig. 7 shows changes of the production volume with the passing of time of the ICT companies (participants and non-ICT companies (non-participants). As both the ICT companies and non-ICT companies were intentionally selected under the Project instead of randomly, it is reasonable to assume that the original production volume on average differed between these two groups of companies. In theory, the production volume of both types of companies should have increased with

the passing of time. In practice, however, the ICT companies appears to have benefited from a more positive impact of training as the scale of their production volume increase after the commencement of the ICT is larger than that of non-ICT companies.

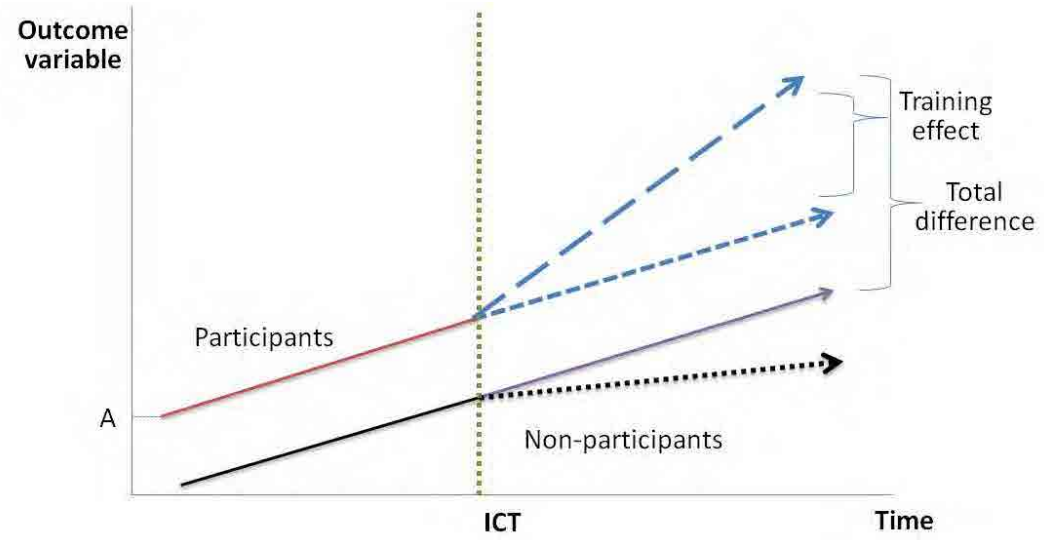

Fig. 7: Summary of the Impact Survey Findings

The final report for the impact survey compiled by the EDRI states that the impacts of introducing KAIZEN are very large for enterprises and can be analysed and evaluated in terms of the following four indicators.

① Business practices (implementation of the 5S, measuring of various production indicators, competence of the workers and muda reduction activities, etc.)

② Product quality (quality inspection of the raw materials and products and ratio of defective products, etc.

③ Labour productivity (productivity determined by the number of workers and amount of capital)

④ Other financial-based business performance indicators (turnover and its annual growth rate, size of added value, profit ratio, added value ratio and amount of capital, etc.

The analysis as well as comparison results of the data obtained in the baseline survey and follow-up survey under the Project indicate significant positive outcomes for both LMEs and MSEs, especially in relation to the following points.

① Enhancement of quality improvement activities for production processes and products
② Increased added value, productivity and profit ratio

The reasons for such enhancement/increases were (i) an improved working environment (shopfloor), making the work more efficient, through the implementation and practice of the 5S and a reduction of muda as emphasised in the ICT and (ii) improved awareness of the quality of raw materials, processes

and products due to enhanced awareness of the work, processes and working environment among workers as well as management, leading to increased added value and productivity, in turn increasing the profit ratio. In contrast, the measuring of various production indicators (mean production time for each product and indicators to measure/determine the required work time based on the required work volume), competence of the workers (development of multi-skilled workers and practice of multi-machine handling) and ratio of defective products did not make a significant improvement. The fact that these indicators not only require a long time for any improvement to emerge but also demand the application of advanced KAIZEN techniques/tools beyond basic KAIZEN may have been the reason for their lesser improvement in the ICT. It is certain that these indicators will improve if continual guidance on KAIZEN activities is provided for former ICT companies.

When the KAIZEN effects of ICT were compared between LMEs and MSEs, MSEs showed larger effects. By definition, the plants of MSEs are much smaller than those of LMEs. Once an owner decides to introduce KAIZEN, the policy can quickly spread throughout the company with an immediate effect.

Based on the above findings, it can be concluded that the introduction of KAIZEN activities in developing countries is extremely beneficial because of the high level acceptability of commonsense ideas, relatively small scale of required initial investment and many positive impacts on business management and production.

The impact survey discovered several non-ICT companies which had voluntarily introduced KAIZEN, illustrating some positive impacts of the publicity and educational activities regarding KAIZEN. The publicity of KAIZEN in Ethiopia is actively sought through radio and television broadcasting and other mass media as part of the KAIZEN dissemination activities of the EKI. In addition, widespread activities led by TTTs and ReMSEDAs have been conducted. As a result, the level of public awareness of KAIZEN has much improved. The impact survey discovered more than the anticipated effects of KAIZEN guidance at the ICT companies as a spillover effect of such guidance at non-ICT companies was confirmed.

The findings of the impact survey were reported by the EDRI at the First Meeting of the NKC held on 16th September under the chairmanship of the Prime Minister of Ethiopia. A more detailed report was also made by the EDRI at the KAIZEN seminar held in AA on 10th October. Refer to Appendix 11: Final Report for the Impact Survey for the concrete survey findings.

7. Innovative Project Management and Lessons Learned

(1) Lessons for Project Management

Because of the difficulty to clearly demarcate as well as coordinate activities under the Project and the KAIZEN dissemination activities implemented by the EKI separately from the Project,

differences in opinion emerged between the JET which prioritised the systematic progress of the Project and the EKI which activity promoted its own KAIZEN dissemination activities, resulting in a strained relationship for a period of some 18 months after the launch of the Project. In addition, the smooth operation of the Project was hampered by the diversion of the vehicles and human resources (EKI consultants) required for the implementation of training under the Project to the EKI's own activities.

However, the other side of the coin is that the KAIZEN dissemination activities independently pursued by the EKI are voluntary actions inspired by the Project and, as such, can be highly evaluated as outputs of the Project. One lesson learned here is that in assisting the EKI, the JET should not be fixated on the systematic progress control of the Project. Instead, the JET should be prepared to (i) change the planned activities in a flexible manner in response to requests made by the EKI and (ii) consciously vary the intensity of its assistance by giving more concentrated assistance to those areas of KAIZEN with which the EKI is unfamiliar while providing only useful guidance and reference materials for those areas with which the EKI is familiar.

(2) Innovative Project Management

Throughout the project period, the JET members tried hard to maintain communication with the EKI at the same frequency and with the same intensity as communication achieved in similar projects in the past. However, because of the rapidly changing business environment of the EKI which is partly due to the strong expectations of the government, compared to C/Ps in other countries, there were many occasions when mutually agreed matters by the JET and EKI were suddenly changed without notice or the JET was not informed on an event planned by the EKI, resulting in the duplication of the project-related and the EKI's own activities and necessitating the JET members to waste much time in regard to coordination. To rectify this situation, the project site introduced a thirty minute meeting every Monday morning (08:30 - 09:00) to check the progress of the work, pending issues and their solutions and future plans. Some of the EKI trainers attended these meetings with a view to establishing a uniform understanding and promoting information sharing within the EKI. In regard to the top personnel of the EKI with which there were many routine opportunities for communication, an e-mail (Weekly Report) describing the various activities conducted during the previous week and future schedule was sent to them every Sunday to ensure their familiarity with the progress, etc. of the Project. As a result of these efforts, a relationship of trust between the JET and EKI was developed in the second half of the Project, improving the communication problem.

The implementation process of the Project described above suggests the importance of more frequent communication than usual on the project side through the development of a proper understanding of the ongoing situation and organizational characteristics of the EKI.

(3) Lessons Relating to Effective Dispatch of Experts

The period of some two and a half months between Phase 1 and Phase 2 constituted an inactive period of the Project as the lack of a valid contract for this period meant that Japanese experts could not be assigned to Ethiopia to provide direct guidance for the EKI and other personnel. Even though key issues to be heeded by the EKI during this period were discussed in advance between the JET and EKI, the provision of effective KAIZEN guidance by the Japanese experts was difficult because of their absence from Ethiopia. As a result, a qualitative decline of the training was inevitable. The lesson here is to avoid any occurrence of a long period of expert absence.

(4) Lessons Relating to Transfer of Techniques, etc.

1) Lessons Relating to Cascade-Type Transfer of Techniques, etc.

To ensure the high quality of training by EKI personnel after the Project has ended, the cascade-type transfer of KAIZEN techniques, etc. was initially assumed whereby excellent personnel selected from among former trainee EKI consultants involved in ICT at LMEs would work as trainers for subsequent training courses. Howeer, the candidates to beocme trainers were often assignd to the EKI's own KAIZEN activities, impeding the planned cascade-type training of EKI consultants. In the case of ICT involving MSEs, the teaching responsibility for CRT subjects was gradually shifted to the EKI consultants between the third batch and sixth batch TTTs training. However, as the training batches progressed, less time was available for the transfer of techniques, etc. (skills), making it difficult to find extra time for the transfer of further KAIZEN techniques, etc. to the trainers. One reason for this is that this issue was not sufficiently considered when the JET prepared the work schedule. On its part, the EKI was not fully aware of the need and importance to set aside time for the transfer of techniques, etc. to the trainers. In order to ensure a high quality of training by the EKI in the post-project period, cascade-type trainer training is a major premise. The lesson here is that the JET should have planned the necessary activities and man-hours at the time of preparing the PDM and work plan and should have agreed these with the EKI.

2) Lessons Relating to Transfer of Skills to C/P

The reality of many EKI consultants is that they understand the theories but significantly lack the skills to apply the theories. Such skills can be developed with experience. As the speed of the organizational expansion of the EKI is rapid, it is essential to facilitate the development of application skills through training. A viable curriculum link between the CRT and ICT is required. The introduction of case studies in the later part of ICT is effective. However, the preparation of case studies is very time consuming and the trainers must have certain knowledge and experience to make case studies truly effective. The

insufficient introduction of case studies under the Project is a vital lesson to be learned for the future.

(5) Lessons Relating to Follow-Up Survey on Former Trainee TTTs

The follow-up survey on former trainee TTTs began in March, 2014 in accordance with the recommendation of such a survey in the Mid-Term Evaluation conducted in July, 2013. The purpose of this follow-up survey was to check the state of KAIZEN dissemination activities by former trainee TTTs in the Project in order to identify problematic issues for future training. This follow-up survey discovered that the former trainee TTTs were more actively involved in activities than was previously anticipated but that the actual activities were virtually restricted to the implementation of the 5S and reduction of muda. The situation suggested that should their activities continue without intervention, it was likely that both the guiding side (TTTs) and learning side would settle for routine work with little enthusiasm.

Such observation made the establishment of a mechanism designed to assist the continued commitment of TTTs to KAIZEN activities in the post-training period essential. To be more precise, the required mechanism to continue at least basic KAIZEN activities while improving the quality of KAIZEN activities may involve touring guidance by EKI consultants, the dissemination of more advanced KAIZEN, an award system relating to the 5S and a qualification system for TTTs.

Because of the assignment of a Japanese expert in charge of the follow-up survey and the commencement of the said survey as late as March, 2014 which was the final year of the Project, there was not enough time to implement activities to establish a mechanism to produce concrete improvements after the identification of pending issues. An important lesson here is that the JET and EKI should have made a request to the JICA for the dispatch of the said expert sooner so that an expert could have been dispatched shortly after the Mid-Term Evaluation.

(6) Lessons Relating to Monitoring Activities by KPTs

The mnitoring of activities by KPTs disclosed certain differences between KPTs and QCC. These are ① KPTs form part of the formal command chain to govern the production floor (in contrast, QCC means at least in theory “a small voluntary group engaged in KAIZEN at the production floor), ② the policies and targets adopted by KPTs are often unrelated to the policies and targets established by the top management even though the latter should, in principle, be broken down into policies and targets for the production floor and ③ there is a person in charge of monitoring KPT activities. However, the identification of the differences between QCC in Japan and KPTs and the categorisation of any differences is wrong. Any differences which are found should instead by treated in an innovative manner to reflect a particular circumstance in Ethiopia. From such a viewpoint, there is a contradiction between ① where KPTs are expected to function as an

execution team for instructions issued after management policies are broken down for implementation at the shop floor and ② where an actual KPT does not function as expected in ①. This contradiction is a problem which must be solved. One solution may be the development and implementation of a training scheme for the capacity building of KPT leaders so that KPTs can achieve the targets delegated to them from above while assuming that KPTs form part of the company organization.

(7) Lessons Relating to Impact Survey

The lessons learned from the impact survey conducted under the Project are compiled from such viewpoints as 1) timing of data collection, 2) subject matters and number of questions in the questionnaire and 3) standardisation of the names of enterprises.

1) Timing of Data Collection

At the beginning of the Project, there was a long list of LMEs. Based on the planned selection of all host LMEs for ICT for all batches of training in the subsequent three year period from this list, a baseline survey on all of the LMEs on this long list was conducted. However, it was decided not to use this long list for the selection of ICT companies from the second batch ICT onwards and a system of selecting ICT companies from the list of candidate enterprises prepared for each batch was introduced. The reasons for this change were (i) the discovery of a shortcoming of the long list (some of the listed enterprises did not meet the selection criteria) during the process of selecting ICT companies for the second batch training, (ii) the change of the C/P responsible for LMEs, (iii) the finding of suitable enterprises for ICT even though they were not included on the long list and (iv) the change of the project policy to include state enterprises in the scope of selection (the original plan was to select only private enterprises). However, the selection of non-listed enterprises for ICT necessitated the introduction of a new baseline, resulting in an additional survey cost.

One lesson learned from the actual experience in Ethiopia described above is that because of the considerable uncertainty surrounding project implementation in developing countries, it is necessary at the time of designing an impact survey, particularly a survey covering a long period of several years, to prepare for possible slow progress of the survey, to come up with countermeasures for such a delay in advance and to agree on such countermeasures with the subcontractor at the time of signing the contract. In regard to the training of researchers to be conducted by the subcontractor, the experts in charge should have actively planned and implemented the observation of the training scenes and survey sites for the feeding back of problems found to the subcontractor in a timely manner even if these activities were restricted by limited opportunity because of time constraints instead of simply receiving a training report from the subcontractor.

2) Subjects and Number of Questions in Questionnaire

Because of the nature of the design of the impact survey (featuring comparison of the pre-ICT and post-ICT conditions of the ICT companies), the questions in the questionnaire had to be decided at the beginning of the Project (when neither the CRT nor the ICT had started) and the work to prepare the questionnaire involved academics but not KAIZEN experts (who were later asked to comment on the prepared questions). As a result of the fact that the impact survey (i.e. the questionnaire) had not been designed to gather data on actual cases and effects of KAIZEN on enterprises was only noticed later. From the viewpoint of understanding the actual effects of KAIZEN, a survey focusing on the concrete activities under the Project was important as such a survey would have revealed (i) the level of satisfaction with the training among EKI consultants, TTTs and ICT companies and (ii) the situation of the continuity of KAIZEN activities in the post-training period. Such a survey was actually separately conducted under the Project but was not a fully-developed survey to produce much needed data. It was necessary for the JET to identify the types of survey required as the Project progressed and to plan and implement such surveys in a comprehensive manner.

3) Standardisation of Enterprise Names

In regard to the names of individual enterprises, there were many cases of a single enterprise having several different English as well as Amharic names. As Ethiopian enterprises do not have a formal address, it was sometimes quite difficult to identify an enterprise. The use of a standardised name for each enterprise is necessary, at least within the framework of the Project (and the EKI).

(8) Lessons Relating to Training in Japan and Third Country Training

Both training in Japan and third country training were held twice duirng the project period. In each training, a programme to assist the assumed future activities of the EKI was proposed by the JET and implemented. The participating EKI staff members further developed their capacity and the EKI consolidated its organizational system through these training opportunities and both types of training contributed to enhancing the quality of the project outputs. The lessons learned are (i) a need for further guidance to enable the EKI to prepare training programmes without external assistance and (ii) the importance of utilising feedback from training to the maximum extent.

These lessons were first felt in the third country training in Malaysia where the Malaysia Productivity Corporation (MPC) was entrusted to conduct the training. Because the first training was well received by the EKI, the second training was conducted using almost the same programme proposed by the JET to the MPC. While the level of satisfaction among the

participants in the second training was generally high, many participants expressed a preference for a greater proportion of OJT and other practical training involving work at the actual production floor. The underlying reason for this preference is that when the trainees underwent training on the internal auditing of a plant and office by an accompanying actual internal auditor at an auto part manufacturer which they visited, they developed a strong interest in the mechanism of internal auditing and placement of an auditor to the extent that they would like to introduce the system in Ethiopia. In response to such interest, the MPC made a very meaningful proposal to the EKI that it may be a good idea to organize subsequent training in the form of a week long intensive training specially featuring OJT on a single subject, such as internal auditing for example. Taking note of this proposal, the project side now believes that the provision of assistance designed to realise the preferences voiced by the trainees, as in the case of internal auditing, in the future with the initiative of the EKI is essential.

Countries other than Malaysia should be considered for third country training in the future. As the next phase of cooperation is likely to demand that the EKI (i) intensity its capacity building based on advanced KAIZEN theories and techniques and (ii) consolidate its management capability as the core organization for the dissemination of KAIZEN, Argentina where a qualification certification system and KAIZEN dissemination network have been established with JICA assistance may be a viable candidate host country for third country training for Ethiopian personnel. In fact, Argentina is a leading host country for third country trianing for Central and South American countries (in addition to some Portuguese-speaking African countries). The EKI which aims at becoming a centre of excellence in Africa should be able to learn many useful lessons from Argentina.

8. History of PDM Revisions

The PDM has been changed twice and currently the PDM (Ver.2.0) is latest. The first reversion has been made at the third JCC held on January 2013 by being discussed with the stakeholders. The second reversion has been done on July 2013 by the Mid-Term Evaluation Team based on the progress situation of the Project and their own recommendations. The modified items and their reasons are shown in Table 19 and 20.

The PDM (Ver. Draft 1, 1.0, 2.0) are shown in Appendix 12: PDM (Vers. Draft 1, 1.0 and 2.0).

Table 19: History of PDM Revisions 1

<table>
<tr><th></th><th>Subject Item for Revision</th><th>Revisions Made</th><th>Background and Reasons</th></tr>
<tr><td>1</td><td>Target Areas</td><td>① The principal locations of the selected LMEs and MSEs have been expanded from Addis Ababa at the beginning of the Project to Addis Ababa and its vicinity.
② The number of target areas has been increased from 5 to 7.</td><td>① In November, 2011, a request was made by the Minister of Education to conduct training in Addis Ababa as the trainees would be called to come to Addis Ababa. This eliminated the need for the Japanese experts to travel to various areas to conduct training.
② The list of candidate TTTs received from the FeTA included those in Hareri Hizb State and Dire Dawa, both of which were not included in the original target areas. The reason for the omission of these two areas from the original PDM was a security problem. However, revision ① above made it unnecessary for the Japanese experts to travel to these areas as the trainees based in these areas would travel to Addis Ababa. Because of this, these two areas were added to the target areas.</td></tr>
<tr><td>2</td><td>Overall Goal 1</td><td>The percentage of private enterprises implementing quality and productivity improvement (KAIZEN) (three years after the completion of the Project) is set at 5%.</td><td>Some 7,500 enterprises are registered with the Investment Agency. It is assumed that 375 enterprises or 5% of the total would be implementing KAIZEN activities based on the following calculation. (50 LMEs and 170 MSEs (220 in total) are expected to participate in ICT during the project period of three years. These 220 enterprises represent 3% of the registered enterprises (220/7,500 = 0.03 (3%)). However, there is information that three-quarters of the enterprises registered with the Investment Agency are not actually in operation. Taking this information into consideration, 220 enterprises represent approximately 12% of the actually operating enterprises (220/ (7,500/4) = 0.1173 (11.7%).</td></tr>
<tr><td>3</td><td>Overall Goal 2</td><td>The percentage of enterprises which answer that KAIZEN is effective among those which have introduced KAIZEN is set at 75% (three years after the completion of the Project).</td><td>The original phrase was “XX% of the respondents answering that quality and productivity improvement (KAIZEN) is effective”. Because of the ambiguity concerning the meaning of “respondents”, a more clear phrase of “those (meaning enterprises) which have introduced KAIZEN” was employed. A figure of 75% is used based on the relevant findings of the questionnaire survey conducted with the LMEs and MSEs participating in ICT.</td></tr>
<tr><td>4</td><td>Project Indicator 1</td><td>The number of qualified EKI consultants is set at 60.</td><td>As the fifth batch of LME training can commence (not complete) by November, 2014 during the project period, the calculation here is based on the number of trainees up to the fifth batch. This number includes five (out of the nine originally trained) consultants training during the pilot project in 2009 through 2011 and three trainers newly employed by the EKI since the third batch MSE training. The number also considers the departure of trainees during the training period as past experience shows.
<table>
<tr><th>LMEs</th><th>No. of Sessions</th><th>No. of Qualified Consultants</th></tr>
<tr><td>Previous Phase</td><td>--</td><td>5</td></tr>
<tr><td>Additional MSE Trainers</td><td>--</td><td>3</td></tr>
<tr><td>1st Batch</td><td>2</td><td>10 (0)</td></tr>
<tr><td>2nd Batch</td><td>2</td><td>10 (△?)</td></tr>
<tr><td>3rd Batch</td><td>3</td><td>15 (△?)</td></tr>
<tr><td>4th Batch</td><td>3</td><td>15 (△?)</td></tr>
<tr><td>5th Batch</td><td>3</td><td>15 (△?)</td></tr>
<tr><td>Total</td><td>13</td><td>75 (△?)</td></tr>
</table>
Note: “Qualified” means the successful completion of the training course having met the completion criteria.</td></tr>
</table>

<table>
<tr><th></th><th>Subject Item for Revision</th><th>Revisions Made</th><th>Background and Reasons</th></tr>
<tr><td>5</td><td>Project Indicator 2</td><td>The number of qualified TTTs is set at 170.</td><td>Although the 8th batch of MSE training will have been completed by November, 2014 when the Project ends, a figure of 170 is set in view of some drop-outs in each training course.
<table>
<tr><th>MSEs</th><th>No. of Sessions</th><th>No. of Qualified TTTs</th></tr>
<tr><td>1st Batch</td><td>4</td><td>20 (Δ2)</td></tr>
<tr><td>2nd Batch</td><td>4</td><td>20 (Δ2)</td></tr>
<tr><td>3rd Batch</td><td>3</td><td>15 (Δ?)</td></tr>
<tr><td>4th Batch</td><td>3</td><td>15 (Δ?)</td></tr>
<tr><td>5th Batch</td><td>5</td><td>25 (Δ?)</td></tr>
<tr><td>6th Batch</td><td>6</td><td>30 (Δ?)</td></tr>
<tr><td>7th Batch</td><td>6</td><td>30 (Δ?)</td></tr>
<tr><td>8th Batch</td><td>6</td><td>30 (Δ?)</td></tr>
<tr><td>Total</td><td>38</td><td>185 (Δ4+α)</td></tr>
</table></td></tr>
<tr><td>6</td><td>Project Indicator 3</td><td>The number of batches for EKI consultant training (LMEs) is set at five.</td><td>See No. 4 above</td></tr>
<tr><td>7</td><td>Project Indicator 4</td><td>The number of batches for TTT training (MSEs) is set at eight.</td><td>See No. 5 above</td></tr>
<tr><td>8</td><td>Project Indicator 5</td><td>The proportion of enterprises participating in ICT which answer that the results are satisfactory is set at 75%.</td><td>The figure is assumed based on the relevant findings of the questionnaire survey conducted with LMEs and MSEs participating in ICT.</td></tr>
<tr><td>9</td><td>Output 1-2</td><td>The number of meetings held with the relevant organizations is set at 20.</td><td>The figure is assumed based on the number of meetings already held with the relevant organizations in the course of the Project.</td></tr>
<tr><td>10</td><td>Output 1-4</td><td>The total number of participants' at the KAIZEN seminars is set at 600.</td><td>It is planned to hold a KAIZEN seminar on six occasions and the planned number of people invited to each seminar is shown in the following table (740 people in total). Assuming that some 20% of these people cannot attend because of a previous engagement, etc., the total number of participants is assumed to be 600.
<table>
<tr><th>Date</th><th>City</th><th>Participants</th></tr>
<tr><td>2012.11</td><td>Addis Ababa</td><td>200 (180)</td></tr>
<tr><td>2013.3</td><td>Nazret</td><td>80 (64)</td></tr>
<tr><td>2013.6</td><td>Awasa</td><td>80 (64)</td></tr>
<tr><td>2013.10</td><td>Dire Dawa</td><td>150 (120)</td></tr>
<tr><td>2013.12</td><td>Bahir Dar</td><td>150 (120)</td></tr>
<tr><td>2014.3</td><td>Mekelle</td><td>80 (64)</td></tr>
<tr><td colspan="2">Total</td><td>740 (600)</td></tr>
</table>
Note: The figures in brackets are 80% of the number of people invited and the total is approximately 600.</td></tr>
</table>

<table>
<tr><th></th><th>Subject Item for Revision</th><th>Revisions Made</th><th>Background and Reasons</th></tr>
<tr><td>11</td><td>Output 2-4</td><td>The number of LMEs participating in ICT is set at 50.</td><td>See No. 4 above and the table below.
<table><tr><th>LMEs</th><th>No. of Sessions</th><th>No. of ICT Companies</th></tr><tr><td>1st Batch</td><td>2</td><td>10 (△1)</td></tr><tr><td>2nd Batch</td><td>2</td><td>10 (△?)</td></tr><tr><td>3rd Batch</td><td>3</td><td>15 (△?)</td></tr><tr><td>4th Batch</td><td>3</td><td>15 (△?)</td></tr><tr><td>5th Batch</td><td>3</td><td>15 (△?)</td></tr><tr><td>Total</td><td>13</td><td>65 (△1+α)</td></tr></table>Note: The number of LMEs participating in the 1st Batch ICT was 9 as one dropped out.</td></tr>
<tr><td>12</td><td>Output 3-4</td><td>The number of MSEs participating in ICT is set at 170.</td><td>See No. 5 above.
Note: In principle, one trainee TTT is in charge of one enterprise. Therefore, the number of MSEs participating in ICT is equal to the number of trainee TTTs.</td></tr>
<tr><td>13</td><td>Activity 3-1</td><td>The phrase “and Cluster Resource Centres (CRCs)” is deleted.</td><td>This revision follows the decision that the target MSEs are those operating in Addis Ababa and its vicinity.</td></tr>
<tr><td>14</td><td>Note</td><td>Deleted</td><td>As actual target figures are now set, the original note relating to XXs is no longer required.</td></tr>
</table>

Table 20: History of PDM Revisions 2

	Subject Item for Revision	Revisions Made	Background and Reasons
1	Indicator 21 for the Overall Goal: 75% of the respondents answer that quality and productivity improvement (KAIZEN) is effective	Deleted	While the overall goals aims at increasing the number of enterprises implementing KAIZEN, the indicator in question represents the awareness of enterprises of the usefulness of KAIZEN. The link between them is judged to be weak.
2	Means of Verification of the Overall Goal: 1) Questionnaire survey in selected areas 2) Questionnaire survey in selected areas or surveys with chambers of commerce and sectoral associations	Deleted	The feasibility of these questionnaire surveys cannot be determined.
3	Indicators for the Project Purpose: 3) Five training cycles completed for EKI consultants 4) Eight training cycles completed for TTTs	Deleted	The contents of these indicators are repeated under "Activities" in the PDM and, therefore, their deletion does not cause any problems.
4	New indicators for the project purpose	Additional indicator: 3) The system for KAIZEN dissemination is clearly described in the long-term plan for KAIZEN dissemination.	To achieve the project purpose, it is necessary to establish a system for KAIZEN dissemination. The formulation of not only a long-term plan but also a description of such a system in the plan is essential.
5	Indicator for Output 1: 2) Holding of 20 meetings with the relevant organizations Means of verification for the above indicator: 2) EKI reports of activities	Deleted	These meetings are part of the activities and cannot constitute an appropriate indicator to measure the degree of achievement of Output 1.
6	Activity 2	Addition of new Activity 2-8: The EKI examines how the knowledge and skills acquired through the training course are effectively utilized on the ground by the EKI consultants.	Many former trainee EKI consultants are engaged in the EKI's own consulting activities, such as the application of KAIZEN to sugar plants and the dissemination of KAIZEN to higher education. However, it is unclear how the knowledge and skills acquired through the training course are actually utilized. It should prove beneficial for the EKI and JET to jointly examine the state of activities of the EKI consultants in the EKI's own activities to evaluate the practical use of their newly acquired knowledge and skills. This will help the EKI and JET to share vital information on the effectiveness of the Project.
7	Activities 3-6 and 3-7	The phrase (select(s) MSEs" is changed to "select(s) MSEs and TVETs".	At the 4th JCC meeting, it was pointed out that the support vehicles for the TTT training had not been provided by the Ethiopian side. As a measure to solve this problem, it was proposed that the TVETs in Addis Ababa would be considered target organizations for ICT. The contents of the relevant activities were accordingly changed.

9. Records of meeting of the JCC

The records of meeting of the JCC (Joint Coordinating Committee: JCC) are as follows;

The details of each JCC meeting are shown in "Appendix 13: Minutes of Meeting (M/M) of the 1st to 7th Joint Coordination Committee (JCC) Meeting".

1st JCC

Date	26th December, 2011
Summary	The Chairperson was Mr. Newai Gebreab, Senior Economic Advisor to the Prime Minister, and the Deputy Chairperson was Mr. Tadesse Haile, State Minister of MoI. The meeting was attended by Mr. Wondwossen Kiflu, State Minister of MoE, and Mr. Dessalegn Ambaw, State Minister of MoUDC among others. The main agenda was approval of the Work Plan (WP) for the Project.

2nd JCC

Date	5th June, 2012
Summary	Mr. Newai Gebreab, Highest Economic Adviser to the Prime Minister as JCC Chairperson could not participate in it, and thus Mr. Tadesse Haile, State Minister of MoI served as Acting Chairperson. The meeting was attended by Mr. Dessalegn, State Minister for Urban Development and Construction. A notable absentee was Mr. Wondwossen Kiflu, State Minister of Education. The main agenda of the second meeting consisted of ①explanation of the project progress (by Mr. Kikuchi),②reporting of the EKI's activities (by Mr.Getahun) and ③other pending issues.

3rd JCC

Date	12th December, 2012
Summary	It was chaired by Mr. Newai Gebreab, Senior Economic Advisor to the Prime Minister, and Mr. Tadesse Haile, State Minister for Industry, acted as the deputy chairman. Although Mr. Sisay Gemechu, Deputy State Minister for Industry, attended the meeting, there were some notable absentees, such as Mr. Dessalegn Ambaw, State Minister for Urban Development and Construction, Mr. Wondwossen Kiflu, State Minister for Education, and Mr. Gebermeskel Chala, Director-General of the FeMSEDA. The agenda for the third meeting included ① explanation of the progress situation of the Project (by Mr. Kikuchi), ②reporting of the activities and plans of the EKI (by Mr. Getahun) and ③pending concerns. In the course of the discussions, the JICA side proposed the deferment of the explanation of the JICA's ideas regarding project management and the determination of numerical values for the PDM so that these matters could be finalised at further consultation meetings of the people concerned. This proposal was accepted at the JCC meeting.

4th JCC

Date	24th July, 2013
Summary	Mr. Newai Gebreab, Highest Economic Adviser to the Prime Minister as JCC Chairperson could not participate in it, and thus Mr. Tadesse Haile, State Minister of MoI served as Acting Chairperson. Another prominent absentee was Mr. Wondwossen Kiflu, State Minister of Education. Meanwhile, ECCSA and AACCSA attended the meeting, representing new organizations of which participation in the JCC was decided at the third meeting. The main agenda for the fourth meeting included ①explanation of the progress situation of the Project and pending concerns (by Mr. Kikuchi), ②reporting on the progress of the EKI's activities (by Mr. Getahun) and ③reporting on the mid-term evaluation results (by Mr. Honma, an international cooperation expert of the JICA). The main concerns regarding the progress of the Project and the relevant proposals were discussed.

5th JCC

Date	18th December, 2013
Summery	Mr. Newai Gebreab, Highest Economic Adviser to the Prime Minister as JCC Chairperson could not participate in it, and thus Mr. Tadesse Haile, State Minister of MoI served as Acting Chairperson. Mr. Wondwossen Kiflu, State Minister of MoE and Mr. Dessalegn Ambaw, State Minister of MoUDC was not available. The main agenda of this JCC was to: ① report the progress of the project; ②explain the framework of the long-term plan; and ③discuss concerns about the entire project.

6th JCC

Date	29th July, 2014
Summery	The Chairperson was Mr. Newai Gebreab, Senior Economic Advisor to the Prime Minister. Mr. Tadesse Haile, State Minister of MoI, Mr. Wondwossen Kiflu, State Minister of MoE and Mr. Dessalegn Ambaw, State Minister of MoUDC were not available. The main agenda of this JCC was to: ① report the progress and prospects of the Project (by Mr.Kikuchi); ② report the terminal evaluation of the Project; and ③suggestions for the next phase included the in concepts of the human resources development centre.

7th JCC

Date	2nd October, 2014
Summery	The Chairperson was Mr. Newai Gebreab, Senior Economic Advisor to the Prime Minister. Mr. Tadesse Haile, State Minister of MoI, Mr. Wondwossen Kiflu, State Minister of MoE and Mr. Dessalegn Ambaw, State Minister of MoUDC were not available. The main agenda of this JCC was the terminal report of the Project (by Mr.Kikuchi).

10. Recommendations

(1) Recommendations for Strengthening of Organizational Structure of EKI

Although the Project achieved more positive outcomes than anticipated, it also encountered many problems, posing pending issues for the EKI to deal with in the coming years. The following four actions are recommended to strengthen the entire organizational structure of the EKI based on knowledge obtained during the three years of experience of the Project.

1) Strengthening of Management Capability

When the EKI was first established, it was a small organization with only a few staff members, including the DG. After three years, the EKI has now more than 100 staff members (as of October, 2014) of which 70 are consultants involved in the dissemination of KAIZEN. With such a rapid increase of the number of its staff members, strengthening of the organizational management capability has emerged as an urgent task. As the EKI plans to double the number of staff members in the next 2 - 3 years, there is an increasing need to deal with this task.

In addition to the strengthening of its KAIZEN-related skills, the EKI faces such essential tasks as strengthening of its overall management capability as well as its administration. The EKI should, therefore, effectively achieve the following tasks.

- Establishment of a sound organizational structure of the EKI (review of the current overall organizational structure; review of the organizational structure and management system, procedure, decision-making process, reporting mechanism and contents of powers transferred at individual directorates)
- Capacity building/training of middle management (raising of the awareness of one's own responsibilities; strengthening of the practical abilities required for one's own job, especially planning ability; strengthening of the ability to implement the PCCA cycle in a precise manner)
- Establishment of management infrastructure/mechanism (database; reporting system)
- Introduction of such KAIZEN techniques as the PDCA cycle, policy deployment and cross-functional teams)
- Capacity building of supporting staff members

2) Strengthening of KAIZEN Consulting Capability

The purpose of the Project is to develop the KAIZEN dissemination capability in Ethiopia. Strictly speaking, this means strengthening of the consulting capability of the relevant persons to disseminate basic KAIZEN concepts as well as systems and techniques. As the core and lead organization for the dissemination of KAIZEN in Ethiopia, the EKI should introduce the following systems and strengthening measures to further improve its consulting capability.

- Establishment of a qualification certification system for consultants (involving an official qualification which can be obtained by private sector consultants in the future)
- Introduction of an occupational ability qualification system based on the “Strategic Framework of Ethiopia KAIZEN” (occupation ability ranking system to match the three/four ranks of KAIZEN systems/techniques as adopted by this Framework)
- Strengthening of the project management capability of KAIZEN teams (strengthening of the KAIZEN project management capability
- Advancement of KPT operations (redefinition of KPTs; introduction of a KP story)

3) Establishment of Mechanism to Continually Promote KAIZEN

KAIZEN is described as “continuous improvement” in English. Many enterprises strive to promote this “continuous improvement/KAIZEN”. An official policy to develop a system or mechanism to help those enterprises which have just begun to implement KAIZEN is required so that their infant KAIZEN activities can eventually develop into fully-fledged KAIZEN activities.

- Establishment and operation of a system to train KAIZEN consultants (including private sector consultants and third country consultants)

- Establishment and operation of a more advaned training system for TTTs
- Establishment and operation of a follow-up mechanism for client enterprises
- Establishment and operation of a follow-up mechanism for TTTs who have completed training (including the development of a simple manual for TTTs and TVET trainers)

4) Strengthening of Centre of Excellence Function

With the understanding for the need for KAIZEN dissemination on the part of the Government of Ethiopia and continual assistance by JICA, the EKI is likely to establish its status as the core and lead organization for KAIZEN dissemination in Ethiopia in the next five years. In addition, the EKI has the potential to become a KAIZEN centre of excellence for other African countries except for the Republic of South Africa. The EKI should conduct the following activities with full awareness of its own potential.

- Strengthening of its function as the organization to lead KAIZEN dissemination to not only enterprises but also hospitals, public institutions, schools and even homes as a national movement
- Strengthening of its role as a leading organization for KAIZEN dissemination in Africa

(2) Recommendations Relating to KAIZEN Training

1) Necessity of Approach to KAIZEN from Human Aspect of KAIZEN Activities

The need for an approach to KAIZEN from the human aspect of KAIZEN activities is much stronger today that before, necessitating the relevant studies and training to ensure the effective as well as efficient dissemination of KAIZEN. There are four reasons for this as explained next.

① Expansion of the targets of KAIZEN dissemination and contents of KAIZEN

The subjects of KAIZEN dissemination have been ever expanding to include not only manufacturing industries but also service industries, public institutions and schools for higher education as well as compulsory education. Such expansion has been driven by the government policy to develop KAIZEN as a national movement to strive for a better tomorrow rather than viewing it simply as a device to strengthen the competitiveness of enterprises. For this purpose, it is insufficient to narrowly define KAIZEN in terms of QC or IE. A study on the human aspect of KAIZEN, including the mind-set for KAIZEN, is required to achieve the intended raising of KAIZEN awareness throughout Ethiopian society.

② Necessity for strengthening of the capability of less experienced EKI consultants to adopt the human approach

The EKI has been experiencing a rapid increase of its staff members and this trend is expected to continue for some time, meaning that there will be an expansion of less

experienced EKI consultants. It is not sufficient for KAIZEN consultants to have knowledge of IE and QC techniques and they must also possess the human skills to make enterprises accept their proposals or suggestions. The conventional belief is that such skills are developed through practical experience but the EKI cannot currently really afford to wait for the accumulation of experience by its consultants. It is, therefore, necessary to raise the human aspect of the KAIZEN from the level of implicit knowledge so that any improvement which can be made through training can be achieved as much as possible through training.

③ Importance of working on opinion leaders to endorse KAIZEN

Although KAIZEN assumes the participation of all employees of an enterprise, its dissemination in reality is facilitated by strong interest and participation in KAIZEN activities by opinion leaders. There are some employees who like change, who are interested in new things and/or acknowledge even minor progress in a positive manner and who are prepared to make efforts to enhance such progress. It is important to pick out these employees and to get them involved as opinion leaders to drive the implementation of KAIZEN forward. According to the innovation theory, the heart-felt involvement of one in six workers leads to the rapid dissemination of KAIZEN, illustrating the importance of working on opinion leaders.

④ KAIZEN is facilitated by the human mind and will but not techniques

Even with such a physical environment improvement technique as the 5S, the last S standing for “shitsuke” (meaning “sustain”) represents a human aspect. The success of KAIZEN can ultimately be sustained by the human mind and will rather than learned techniques. When interviewed, some owners will say that their enterprise does not have any problems. However, there s a saying that no problem is the biggest problem. When a problem is understood to be the gap between the actual state and the ideal state, the reason why such owners do not see any problem may be their lack of perception of the ideal state, lack of understanding of the reality or lack of understanding of a perceived problem as a subject for KAIZEN. Viable countermeasures for such a situation can be developed when approached from the human aspect.

Based on the key issues described above, the following three recommendations are made.

i. Development of a subject relating to the human aspect of KAIZEN to be taught during CRT

ii. Creation of opportunities to learn the human aspect of KAIZEN during CRT in the form of role playing and sensibility training

iii. Appointment of a person (or section) responsible for research at the EKI on the human aspect of KAIZEN

(3) Transfer of Advanced KAIZEN Techniques Based on Strategic Framework

The practical implementation of KAIZEN activities based on the Strategic Framework (Strategic Framework of Ethiopia KAIZEN (Version 1)) is essential for the EKI to advance KAIZEN activities in the next phase of cooperation. The recommendations relating to this task are explained below. As a precondition for the transfer of suitable KAIZEN techniques, the Framework classifies individual KAIZEN systems and techniques in terms of five levels (from the lowest mind-set level to the highest excellent level) based on the difficulty of their learning by EKI consultants and also the difficulty of introducing them to enterprises. It must be noted here that there is no strict correspondence between the perceived level of difficulty and the level of individual KAIZEN systems and techniques. Under ordinary circumstances, the level of a KAIZEN system or technique should be determined in correspondence with the level of the problem it is supposed to solve. However, the level of difficulty of a problem to be solved is not only linked to the level of a specific KAIZEN system and/or technique but is also affected by the control level and stance regarding KAIZEN of the enterprise involved. For example, if the control level of an enterprise is low coupled with a passive stance towards KAIZEN, it is difficult to make this enterprise implement such an easy technique as the 5S. If we demand that a strategic framework takes such control level and standard regarding KAIZEN of individual enterprises into consideration, the resulting framework would be very complicated, making it difficult to the people who this framework is intended to serve to understand its contents. For this reason, the Framework referred to here has been simplified to make the level of KAIZEN systems and technologies correspond with the conceived level of difficulty to learn and apply. In other words, the KAIZEN techniques referred to in the Framework assume their application to those enterprises of which both the control level and the stance regarding KAIZEN are classified as intermediate.

With this precondition in mind, the action plan designed to further enhance the positive transfer effects of KAIZEN techniques to EKI consultants in the next phase of cooperation is outlined below.

1) Classification of Training

While training is classified based on the scale of the ICT companies (LMEs and MSEs) under the Project, it will be classified based on the five classified levels of techniques in the Framework (from the lowest mind-set level to the highest excellent level) in the next phase of cooperation.

2) Target Number of Trainees

In contrast to the Project which aimed at training 65 EKI consultants and 185 TTTs, 5 – 20 EKI consultants who completed the training under the Project with excellent results and who have much potential for further progress will be selected for continued training.

3) Adoption of Multiple Cascade-Type Transfer Method

In contrast to the Project where the cascade-type transfer of techniques was tried using trainees with excellent results in the preceding batch of training as trainers for the succeeding batch, the multiple cascade-type transfer method will be adopted to ensure the successful training of a small number of selected EKI consultants as mentioned in 2) above. In this method, all trainees in the first batch will act as trainers for the second as well as subsequent batches of training.

4) Training Period

In contrast to the six month training period under the Project, the training period in the next phase of cooperation will be one year per batch so that the trainee EKI consultants can tackle themes with higher difficulty levels at enterprises.

5) Training Days per Week

The training under the Project took place every weekday. In view of the fact that the EKI trainers and trainees also have their everyday work to do and/or are involved in the EKI's own KAIZEN dissemination activities, the training in the next phase of cooperation will take place two or three days each week.

6) CRT

In contrast to the Project where the CRT emphasised lectures with secondary importance given to case studies, case studies and teaching on the case study method will form the core of CRT with lectures being given secondary importance for the purpose of bridging the gap between CRT and ICT (poor ability to apply theoretical knowledge to concrete situations) discovered during the Project.

7) ICT Companies

In contrast to the Project where ICT was conducted at those companies selected in several stages from a long list prepared by the EKI, the target companies for ICT will be selected from those targeted by the Pilot Project, the Project and the EKI's own KAIZEN dissemination activities in view of the importance of follow-up, etc. for ICT companies.

Table 21 explains the KAIZEN systems and techniques, their objectives and important points in relation to the five KAIZEN levels.

Table 21: Important Points, etc. for Advancement of KAIZEN Activities Based on the Strategic Framework

KAIZEN Level	Implementation Timing	Target KAIZEN Systems/Techniques	Purposes of Target KAIZEN Systems/ Techniques	Remarks
Mind-Set Level	First half of 2015	PDCA-SDCA; occupational safety and health; how to proceed with elementary KPT activities	Learning of some basic KAIZEN techniques not featured in the Project and enhancement of the trainees' understanding of those techniques which they have not fully understood	① Preparation of a manual ② Selection of a small number of trainers' trainer (TT) candidates ③ CRT for TTs ④ CRT by TTs ⑤ More exercises in CRT ⑥ Use of the case method depending on the CRT subjects
Elementary Level	Second half of 2015	Consulting leadership; morale survey and management; purchase and inventory control; MRP basics; JIT basics; self- maintenance; visual control; standardisation; production plan; cost control; direct costing; delivery control		① Selection of enterprises to which the techniques, listed on the left can be applied among those completing the ICT under the Project ② Selection of a small number of TTT candidates ③ Preparation of teaching materials ④ CRT and ICT ⑤ Use of the case method and case studies depending on the CRT subjects ⑥ Preparation of a manual ⑦ CRT and ICT by TTs
Systematic Level	2016 ~ 2018	Production control; day-to-day control; TQM; TPM; TPS; quality assurance; economy calculation; 16 principal mudas; MRP; ISO 9001, PM; ABC; TOC; cell production system; statistical quality control; design of experiments (DoE); crew work analysis; ergonomics; VE; QC process chart; process capability; BSC; higher level muda; new 7 tools of QC	Level corresponding to "advanced KAIZEN consultant" referred to in (4) Recommendations Relating to Strengthening of EKI's Capability to Assist Higher Education, allowing those equipped with this level of KAIZEN techniques to engage in advanced KAIZEN activities. When a person has a certain level of knowledge of other business management functions (business strategy, finance, marketing, sales and HRM, etc.) in addition to KAIZEN techniques at the systematic level, he/she is regarded as being at the level of Super-General KAIZEN Consultant in (4).	
Strategic Level	2019 ~ 2020	New product development; financial management; policy management; creative KAIZEN team; ISO series; competitive analysis; 5 force analysis; SWOT analysis; business analysis; quality function deployment; FEMA; FTA; quality assurance; SMED	Trainees master and become capable of using some of the techniques, etc. listed on the left. This is the level required of a Specific Advanced KAIZEN Consultant in (4) and the ultimate target level to be reached by the transfer of techniques in the next phase of cooperation.	① Selection of enterprises which are deemed capable of applying the KAIZEN techniques listed on the left from among those enterprises which have completed ICT ② Selection of a small number of TT candidates ③ Preparation of teaching materials ④ CRT and ICT ⑤ Use of the case method and case studies depending on the CRT subjects ⑥ Preparation of a manual ⑦ CRT and ICT by TTs
Excellent Level	2021 ~ 2025	Innovative control; global production control; value management; value chain; VA; business model; business system analysis; creative thinking; TRIZ	Level required for global business management	① CRT-based training using the case method and case studies ② ICT at this level is difficult to implement. ③ The preparation of a manual for this level is difficult.

The above table indicates the importance of widening the scope of KAIZEN from the production floor to management personnel as well as the marketing, labour and financial aspects of business management. In order for KAIZEN activities to contribute to the GTP-2, KAIZEN techniques at the production floor, such as the review of processes and work practices and improvement of the line balance and layout, are not enough. Instead, the scope of KAIZEN should cover other aspects of business management, including a KAIZEN approach from the viewpoint of competitive strategy and marketing.

However, it is also necessary to consider the possible disadvantages associated with such widening of the scope of KAIZEN. In Japan, the development of QC activities to TQM incorporating the top management and departments other than the production department and also the expansion of the target sectors of QC from the manufacturing sector to the retailing and service sectors appear to have weakened the potency of the original QC. Having learned lessons from the historical precedence of QC activities in Japan, it may be advisable for the EKI to be cautious in regard to the rapid widening of the target areas for KAIZEN in a short period of several years from the production floor to the retail and service sectors to cover not only the manufacturing function but also such business functions as business strategy and marketing. Even if the EKI wants to attempt such expansion, it is likely to find it difficult with the present level of consultants who are not fully capable of applying many KAIZEN systems and techniques.

After generally considering the somewhat contradictory aspects of the future course for KAIZEN, it appears to be more realistic to adopt the following premises for the future training plan for EKI consultants.

① At most enterprises, the introduction of KAIZEN at the production floor alone does not produce beneficial effects. A consultant to conduct this level of KAIZEN is only required to have KAIZEN knowledge and experience up to the Elementary Level in the Framework. It is desirable for some 80% of consultants to reach this level.

② To assist those enterprises with problems which cannot be solved solely by KAIZEN at the production floor and those enterprises of which the control level is high, Super General KAIZEN Consultants capable of dealing with issues relating to business strategy and marketing, etc., Advanced KAIZEN Consultants capable of skilfully applying more difficult KAIZEN systems/techniques and Specific Advanced KAIZEN consultants with knowledge and skills to apply specific and fairly difficult KAIZEN systems/techniques should be trained to constitute some 8%, 7% and 5% of the EKI's consultants. It is desirable for Super General KAIZEN Consultants to act as trainers or to participate in the initial stage of deciding the consulting themes at those enterprises who will receive consulting for the first time in order to properly determine the training direction.

③ The training of the consultants referred to in ① above by those referred to in ② above is desirable while primarily focusing the overall training on the fostering of the more advanced consultants referred to in ② above.

④ The knowledge of KAIZEN themes and techniques required at the Systematic Level and Strategic Level can be completed by case studies and the case method taught in the MSc and Ph.D courses in KAIZEN. However, as universities do not have their own case studies, it is difficult for them to include such case studies in the courses immediately. It is, therefore, advisable to accumulate actual case studies through the forthcoming training of EKI consultants so that the JET, EKI and university teachers involved in these courses can work together to develop suitable teaching materials.

For the implementation of the plan described above, the normal procedure would be to decide KAIZEN themes for the purpose of teaching specific KAIZEN systems and techniques in line with the Framework and then to select target enterprises for ICT to make trainees to acquire practical application skills. It must be noted that these steps are quite different from those in actual consulting activities.

The JET believes that there are at least three basic stances required of KAIZEN consultants when providing a consulting service and these are described below as a message from the JET to the EKI.

① Adoption of the Stance “There is a problem at the beginning” Instead of “There is a KAIZEN technique at the beginning”

KAIZEN cannot function when the starting point is a KAIZEN technique with a view to its application to solve a problem. The correct order is a problem faced by an enterprise to start with and a suitable KAIZEN technique to solve the problem in question is then selection. Persisting with the KAIZEN techniques listed in the KAIZEN Framework to decide problems to be dealt with based on the available KAIZEN techniques is the wrong approach like putting the cart before the horse.

② Conscious Selection of Easier KAIZEN Techniques to Solve Actual Problems

Autonomous and continual KAIZEN can only be achieved when it is conducted with the initiative of the enterprise in question rather than that of a KAIZEN consultant. In this sense, it is essential for KAIZEN techniques to be properly mastered by enterprises for their use. To solve similar problems, it is preferable to apply those KAIZEN techniques which are easy to use. In the case of the task of improving inferior quality for example, most problems can be solved by the application of the seven tools of QC and field observation, which are

easy for workers to understand and implement, instead of the application of such advanced techniques as the design of the experiment method from the beginning.

③ Clarification of Multiple Meanings of "Advanced KAIZEN Techniques"

The phrase "advanced KAIZEN technologies" used by the JET up to the present has in fact four meanings as described below.

i. From techniques for KAIZEN at the production floor to KAIZEN at every level, including top management

This concept of "advanced KAIZEN techniques" is a response to the important status of KAIZEN by the Government of Ethiopia as a pillar for the strengthening of the country's industrial competitiveness. The international market cannot be penetrated by simple KAIZEN at the production floor as such KAIZEN does not guarantee strengthening of the industrial competitiveness of international competitiveness of Ethiopian enterprises. KAIZEN of the business management, including the capability of the top management, is required to develop the comprehensive strength of an enterprise and the relevant KAIZEN techniques must be mastered.

ii. 5S-based KAIZEN to KAIZEN utilising QC and IE

The 5S is the entry point for KAIZEN. Quality and productivity improvement lies beyond the 5S. As KAIZEN means continuous improvement, one cannot stop at the entry point. Here, it means that advanced KAIZEN techniques are required literally.

iii. From knowledge of KAIZEN techniques to application skills

In practice, knowledge is only a small part of KAIZEN. There are many instances where a strong KAIZEN mind has developed unique KAIZEN techniques for application. The emphasis should be shifted from the building of knowledge to the cultivation of application capability. It must be noted that the phrase "advanced KAIZEN techniques" implies "advanced application capability of KAIZEN techniques".

iv. Incorporation of the human heart in KAIZEN techniques

IE and QC are KAIZEN technique mostly targeting things (such hard objects as equipment and products, etc.). However, the human aspect (heart) actually also constitutes an important part of KAIZEN.

As described above, the phrase "advanced KAIZEN techniques" has many different meanings and its significance as its literal meaning is actually low. Literally advanced KAIZEN techniques are presumably required for rare occasions associated with advanced business management

practice. Based on the likely level of Ethiopian enterprises in five or 10 years' time, it will be sufficient for them to be able to fully use up to the middle level of KAIZEN techniques. In this sense, it is necessary to re-examine the prevailing definition of "advanced KAIZEN techniques".

(4) Recommendations Relating to Strengthening of EKI's Capability to Assist Higher Education

The strengthening of higher education by the EKI is said to have two aims. The first aim is that it is expected to develop KAIZEN techniques which are rooted in Ethiopia through the relevant activities (especially with the launch of a Ph.D course in KAIZEN). The second aim is to stop the departure of consultants from the EKI by providing them with the opportunity to obtain a master's degree through the MSc course in KAIZEN.

It is questionable if the first aim can be successfully achieved in view of the Japanese as well as American history of the development of KAIZEN and quality control systems and techniques. Original KAIZEN techniques are developed in response to actual needs at the production floor. In other words, most KAIZEN techniques have been developed by enterprises. The historical fact is that such private sector organizations as the JUSE, JPC and JMA have played important roles of standardising these techniques so that they can be disseminated to other enterprises as well as other industries while higher education institutions have developed the theoretical aspect of KAIZEN techniques.

The second aim is understandable based on the actual situation of personnel management, including the salary gap between the private sector and public sector where the EKI belongs. To ensure the long service of staff members, a combination of various measures is likely to be required, including the establishment of a consultant qualification system, introduction of a professional consultant system whereby external professional consultants work for the EKI on a contract basis and the development of a capability building environment to allow staff members to upgrade themselves through training and seminars.

What is important here is to examine how higher education should perform in view of the essential need for higher education prior to examination of how to strengthen the EKI's capability to assist higher education.

Higher education is linked to the need to develop KAIZEN techniques and to foster KAIZEN consultants. Fig. 8 shows the correspondence between the KAIZEN needs of enterprises and KAIZEN techniques/consulting based on the findings of a survey on consulting needs in Turkey and case studies in Japan.

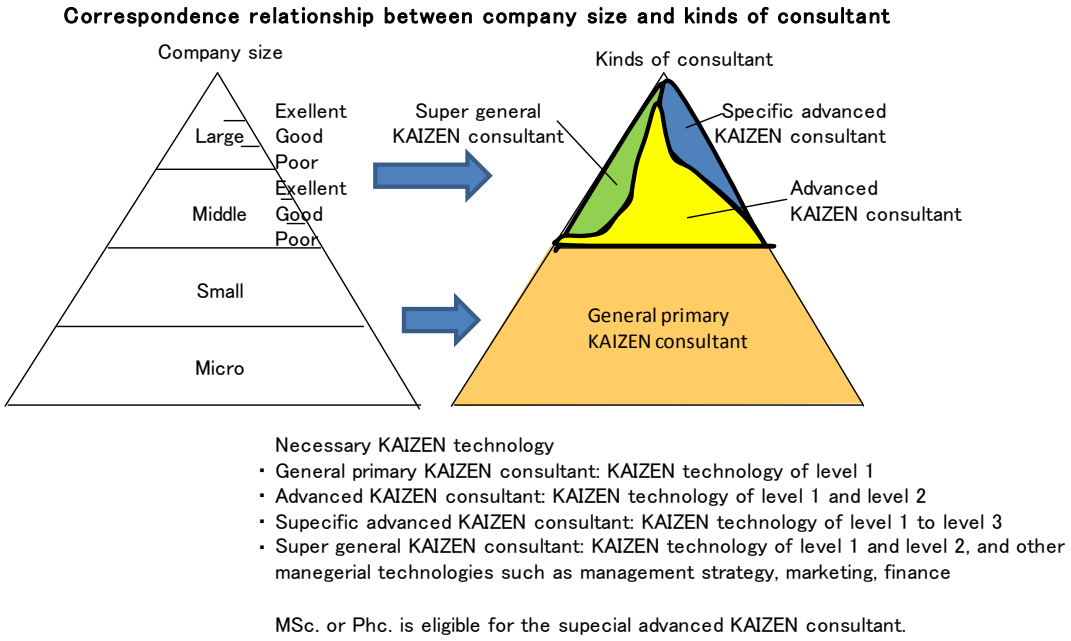

Fig. 8: Correspondence between KAIZEN Needs at Enterprises and KAIZEN Techniques/Consulting

Based on Fig. 8, KAIZEN needs at enterprises can be summarised in the following manner.

- Although the level of KAIZEN techniques required by MSEs is not high, the application of wide-ranging KAIZEN techniques in response to the diverse problems faced by MSEs is necessary. The reason for this is that even though both the manufacturing processes and technologies used by MSEs are not complicated, there is no-one familiar with KAIZEN techniques in most cases.

- In contrast, LMEs generally involve many manufacturing processes as well as many technologies and tend to have such technical staff as foremen, floor managers, quality controllers, product developers and maintenance workers. As such, most problem can be solved in-house even though there is a need for a KAIZEN consultant for advice on those problems which are difficult to solve in-house.

Based on the above summaries, there is a need for ① advanced KAIZEN consultants which can apply wide-ranging KAIZEN techniques of a relatively high level. In addition, there is also a need for ② specific advanced KAIZEN consultants capable of using very advanced KAIZEN techniques to provide guidance for problems which enterprises cannot solve by themselves even though the level of actual need for this type of consultant is currently low in Ethiopia. This kind of need essentially emerges at excellent enterprises where the quality management level is high. There is another need for super general KAIZEN consultants capable of providing guidance from an advanced as well as broad viewpoint, including business strategy. Super general KAIZEN consultants can provide KAIZEN guidance using KAIZEN techniques up to the intermediate level based on their broad knowledge and experience of corporate strategy, business strategy,

marketing and finance and human resources management (HRM). These super general KAIZEN consultants differ from ① advanced KAIZEN consultants in that they are capable of providing adequate advice from a perspective other than KAIZEN at the production floor.

Based on the above, the status of MSc and Ph.D courses in KAIZEN of the EKI is described below in the light of the need to foster the three types of KAIZEN consultants explained above.

- The MSc course is designed to certify graduates as having the capability to apply advanced KAIZEN techniques to enterprises. This capability includes the localisation of KAIZEN techniques and the course aims at fostering ① advanced KAIZEN consultants and ③ super general KAIZEN consultants.

- The Ph.D course is designed to qualify its graduates as ② specific advanced KAIZEN consultants capable of solving problems using very advanced KAIZEN techniques.

Appendices: Main Report

Appendix 1: List of Ethiopian KAIZEN Institute Staff
Appendix 2: Detailed State of Achievement by Indicators Listed in PDM
Appendix 3: State of Achievement of the Planned Activities Listed in the PDM
Appendix 4: Agreement for Handing Over of Equipment ①
Appendix 5: Agreement for Handing Over of Equipment ②
Appendix 6: Totaled Results of Questionnaires to MSc Program Participants
Appendix 7: Basic Information on Higher Education in Ethiopia (Abstract)
Appendix 8: List of Host Enterprises for ICT for EKI Consultants
Appendix 9: List of Host Enterprises for ICT for TTTs
Appendix 10: Questionnaire for the Impact Survey
Appendix 11: Final Report for the Impact Survey
Appendix 12: PDM (Vers. Draft 1, 1.0 and 2.0)
Appendix 13: Minutes of Meeting (M/M) of the 1st to 7th Joint Coordination Committee (JCC) Meeting

Appendix: Separate Volume

- KAIZEN Manual (Theory Part and Application Part)

Appendix: Separate Volume (CD-ROM only)

- Work Plans (Phase 1 and Phase 2)
- Progress Reports (First through Fifth)
- Project Completion Report (main report this time)
- Reports on Training in Japan (First and Second)
- Reports on Third Country Training in Malaysia (First and Second)
- Report on Side Event Organized for the TICAD V Ministerial Preparatory Meeting

APPENDICES

Appendix 1: List of Ethiopian KAIZEN Institute Staff

As of 9 October 2014

						Trainee	Participated as Assistant Trainer/Trainer/ Advisor				
No.	**Employee Name**	**Department**	**Position**	**Starting Date**	**KU Member**	**LME Training**	**LME Trainer**	**MSE Training**	**Training in Japan**	**Training in Malaysia**	**MSc**
1	Getahun Tadesse	EKI Directorate General Office	Director General	2012, 1	○						
2	Hana Mulugeta	EKI Directorate General Office	Auditor	2012, 11							
3	Temesgen GebreEgziabher	Corporate Communication Directorate	Deputy Director	2012, 8						2nd	
4	Mihret Sisay	Corporate Communication Directorate	Literary Expert	2012, 8							
5	Wondwosen Aklile	Finance and Supply Directorate	Finance and Supply Officer	2013, 7							
6	Dada Albe	Finance and Supply Directorate	Cashier	2012, 10							
7	Zertihun Tesfaye	Finance and Supply Directorate	Accountant	2012, 4							
8	Selamawit Tegegn	Finance and Supply Directorate	Accountant	2012, 4							
9	Tsedale Wolde	Finance and Supply Directorate	Store Keeper	2012, 5							
10	Kokobe Taye	Finance and Supply Directorate	Purchaser	2013, 8							
11	Melaku Asfaw	Finance and Supply Directorate	Driver	2012, 5							
12	Hailemariam Shite	Finance and Supply Directorate	Driver	2013, 8							
13	Zelalem Adugna	Finance and Supply Directorate	Driver	2013, 9							
14	Meseret Bekele	Finance and Supply Directorate	Driver	2014							
15	Solomon Melke	Finance and Supply Directorate	Driver	2014							
16	Getachew Nedi	Finance and Supply Directorate	Driver	2014							
17	Mershaye Arega	Finance and Supply Directorate	Cleaner	2013, 9							
18	seble Tesfaye	Finance and Supply Directorate	Cleaner	2013, 9							
19	Birke Awdu	Finance and Supply Directorate	Cleaner	2013, 9							
20	Kebebush Ramso	Finance and Supply Directorate	Cleaner	2013, 9							
21	Sewnet Fente	Planning and Information Directorate	Director	2012, 11						2nd	
22	Negatwa Asrat	Research and Certification Directorate	Director	2012, 5					1st		
23	Awol Kassaw	Research and Certification Directorate	Lead KAIZEN Researcher	2012, 4						2nd	¡
24	Aklile Tesfaye	Research and Certification Directorate	KAIZEN Researcher	2013, 11							
25	Zeineba Siraj	Research and Certification Directorate	Assistant KAIZEN Researcher	2012, 5		3rd				1st	
26	Dawit Gobena	Research and Certification Directorate	Assistant KAIZEN Researcher	2012, 8		2nd	3rd, 4th				
27	Tigist Ayalew	Research and Certification Directorate	Assistant KAIZEN Researcher	2013, 9		4th					
28	Melkamu Garuma	Research and Certification Directorate	Assistant KAIZEN Researcher	2013, 9		4th					
29	Tiblet Tadesse	Research and Certification Directorate	Junior KAIZEN Researcher	2012, 5							
30	Ashenafi Weldetnsay	Human Resource Directorate	Director	2014, 9							
31	Tsigereda Girma	Human Resource Directorate	Personnel Officer	2012, 5							
32	Teshome Megersa	Capacity Building	Deputy Director General	2013, 8							
33	Sofiya Zeray GebreMedhin	EKI Directorate General Office	Executive Secretary	2013, 2							
34	Bekalu Worku	Higher Education Capacity Building Directorate	Director	2012, 4		-			1st		
35	Selamawit Tilahun	Higher Education Capacity Building Directorate	KAIZEN Consultant	2012, 4		3rd				1st	¡
36	Netsanet Megersa	Higher Education Capacity Building Directorate	Assistant KAIZEN Consultant	2013, 9		4th					
37	Solyana Sisay	Higher Education Capacity Building Directorate	Assistant KAIZEN Consultant	2013, 9		4th					
38	Tedla Girma	Higher Education Capacity Building Directorate	Assistant KAIZEN Consultant	2013, 9		4th					
39	Kebede Tsegaye	Service Sector Improvement Directorate	Director	2012, 4					2nd		¡
40	Asnake Gudisa	Service Sector Improvement Directorate	Lead KAIZEN Consultant	2012, 8						1st	¡
41	Abebaw Yimam	Service Sector Improvement Directorate	Senior KAIZEN Consultant	2013, 9		4th					
42	Samson Kebede	Service Sector Improvement Directorate	KAIZEN Consultant	2012, 6	○	-		1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th	2nd		¡
43	Meron Altaye	Service Sector Improvement Directorate	Assistant KAIZEN Consultant	2012, 8		3rd				2nd	
44	Haimanot Tesfahun	Service Sector Improvement Directorate	Assistant KAIZEN Consultant	2012, 8		3rd	4th			2nd	

						Trainee	Participated as Assistant Trainer/Trainer/ Advisor				
No.	**Employee Name**	**Department**	**Position**	**Starting Date**	**KU Member**	**LME Training**	**LME Trainer**	**MSE Training**	**Training in Japan**	**Training in Malaysia**	**MSc**
45	Weldemihret Aregay	Service Sector Improvement Directorate	Assistant KAIZEN Consultant	2012, 8		2nd				2nd	¡
46	Menbere Tilahun	Service Sector Improvement Directorate	Assistant KAIZEN Consultant	2013, 9		4th					
47	Lebeza Alemu Asegie	TVET Directorate	Director	2012, 4		-			1st		
48	Selamawit Kiros	TVET Directorate	Lead KAIZEN Consultant	2012, 6	○	-		1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th	2nd		
49	Fekadu Abate	TVET Directorate	Senior KAIZEN Consultant	2012, 4		3rd				1st	
50	Tujuba Regasa	TVET Directorate	Senior KAIZEN Consultant	2012, 4						1st	¡
51	Fetene Getachew	TVET Directorate	KAIZEN Consultant	2012, 6	○	-		1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th	2nd		¡
52	Firegenet Kinfe	TVET Directorate	Assistant KAIZEN Consultant	2012, 8		3rd				2nd	¡
53	Selamawit Solomon	TVET Directorate	Assistant KAIZEN Consultant	2012, 8		-		5th		2nd	¡
54	Bedasa Fenta	TVET Directorate	Assistant KAIZEN Consultant	2012, 11		-		3rd, 4th, 5th, 6th, 7th, 8th		2nd	
55	Nursedin Hussen	TVET Directorate	Assistant KAIZEN Consultant	2012, 11		-		3rd, 4th, 5th, 6th, 7th, 8th			
56	Kibrom Mebratu	TVET Directorate	Assistant KAIZEN Consultant	2012, 11		-		3rd, 4th, 5th, 6th			¡
57	Solomon Mengistu	Manufacturing	Deputy Director General	2012, 8		-			1st		
58	Zewdinesh Nega Fente	EKI Directorate General Office	Executive Secretary	2013, 2							
59	Yenesew Gashaw	Agro Directorate	Lead KAIZEN Consultant	2012, 4						1st	
60	Woineshet Bekele Mola	Agro Directorate	Senior KAIZEN Consultant	2013, 2		3rd					
61	Demelash Zewdu	Agro Directorate	Assistant KAIZEN Consultant	2012, 4		3rd, 5th				1st	
62	Selamawit Zerihun	Agro Directorate	Assistant KAIZEN Consultant	2012, 8		3rd	4th			2nd	¡
63	Tigist Tolosa	Agro Directorate	Assistant KAIZEN Consultant	2012, 8		2nd				2nd	¡
64	Mindaye Yirga	Agro Directorate	Assistant KAIZEN Consultant	2012, 8		2nd, 5th	4th			2nd	
65	Fikadu Siyum	Agro Directorate	Assistant KAIZEN Consultant	2012, 8		2nd, 5th				2nd	
66	Henok Birmegy	Agro Directorate	Junior KAIZEN Consultant	2012, 4		1st				1st	¡
67	Andualem Ayele	Agro Directorate	Junior KAIZEN Consultant	2012, 4		1st				2nd	¡
68	Kirubel Tadesse	Agro Directorate	Junior KAIZEN Researcher	2012, 4		1st, 5th				2nd	
69	Haftu Hailu	Chemical Directorate	Lead KAIZEN Consultant	2012, 4						2nd	¡
70	Mamo Ayenew	Chemical Directorate	Senior KAIZEN Consultant	2013, 11							
71	Wondwosen Tefera	Chemical Directorate	KAIZEN Consultant	2013, 11							
72	Heletwork Bekele	Chemical Directorate	Assistant KAIZEN Consultant	2012, 8		2nd					¡
73	Tsion Teketel	Chemical Directorate	Assistant KAIZEN Consultant	2012, 8		3rd, 5th	4th				
74	Samrawit Nigussie	Chemical Directorate	Assistant KAIZEN Consultant	2013, 9		4th					
75	Samuel Birru	Chemical Directorate	Junior KAIZEN Consultant	2012, 4		1st				1st	
76	Jemil Abdela	Chemical Directorate	Junior KAIZEN Consultant	2012, 3		1st				2nd	
77	Hana Abera	Chemical Directorate	Assistant KAIZEN Consultant	2013, 9		4th, 5th					
78	Yigedeb Abay	Metal Directorate	Director	2012, 6	○	-	1st, 2nd, 3rd,4th		2nd		¡
79	Trufat Dejene	Metal Directorate	Senior KAIZEN Consultant	2013, 9							
80	Abdulwahab Tola	Metal Directorate	Assistant KAIZEN Consultant	2013, 9		3rd					

						Trainee	Participated as Assistant Trainer/Trainer/ Advisor				
No.	**Employee Name**	**Department**	**Position**	**Starting Date**	**KU Member**	**LME Training**	**LME Trainer**	**MSE Training**	**Training in Japan**	**Training in Malaysia**	**MSc**
81	Mahlet Misgan	Metal Directorate	Assistant KAIZEN Consultant	2013, 9		4th					
82	Fetiya Demss	Metal Directorate	Assistant KAIZEN Consultant	2013, 9		4th					
83	Bezawit Endashaw	Metal Directorate	Assistant KAIZEN Consultant	2013, 9		4th					
84	Bonsa Regassa	Metal Directorate	Assistant KAIZEN Consultant	2012, 8		2nd, 5th					
85	Shimelis Tefera Yalew	Metal Directorate	Junior KAIZEN Consultant	2012, 10		4th, 5th					
86	Seblewongel Haregewein	Textile and Leather Directorate	Director	2012, 5							¡
87	Mesfin Wondimu	Textile and Leather Directorate	Lead KAIZEN Consultant	2012, 4		4th				2nd	
88	Samuel Abebe	Textile and Leather Directorate	KAIZEN Consultant	2013, 11		4th					
89	Meseret Teshome	Textile and Leather Directorate	Assistant KAIZEN Consultant	2012, 8		3rd				2nd	¡
90	Meron Berhanu	Textile and Leather Directorate	Assistant KAIZEN Consultant	2012, 8		3rd				2nd	
91	Feven Addis	Textile and Leather Directorate	Junior KAIZEN Consultant	2012, 4		1st				1st	
	Sisay Fikre	Finance and Supply Directorate	Director	Left							
	Afework Gidey	Textile and Leather Directorate	Assistant KAIZEN Consultant	Left (2014, 4)		2nd					
	Ezra Hailemariam Mekonnen	Corporate Communication Directorate	Director	Left		-			1st		
	Binyam Teklu	Research and Certification Directorate	Assistant KAIZEN Researcher	Left		1st	2nd, 3rd		2nd	1st	
	Mintesinot Melaku	Textile and Leather Directorate	Junior KAIZEN Consultant	Left		1st	2nd, 3rd		2nd	1st	
	Abel Adam	TVET Directorate	Junior KAIZEN Consultant	Left		1st					
	Getachew Hirpesa			Left		1st					
	Mulugeta Adugna	Chemical Directorate	Assistant KAIZEN Consultant	Left		3rd				1st	
	Aradom Gidey	Corporate Communication Directorate	Audio Visual	Left							
	Asefa Yimer	Never transfer to EKI	-	Left (2012, 6)	○			1st			
	Ashreka Yenus	Service Sector Improvement Directorate	KAIZEN Consultant	Left							
	Asnake Tadesse Kasa	Finance and Supply Directorate	Driver	left							
	Ayicheh Nega	Finance and Supply Directorate	Driver	Left							
	Delo Benka	Never transfer to EKI	-	Left (2012, 6)	○						
	Lakech Wondwossen	Finance and Supply Directorate	Purchaser	Left							
	Getahun Zewde	Finance and Supply Directorate	Driver	2013, 8							
	Yohannes Asefa	Finance and Supply Directorate	Driver	2014							
	Heran Tewoldebirhan	Higher Education Capacity Building Directorate	Assistant KAIZEN Consultant	2012, 8		2nd					
	Ousman Seid	Textile and Leather Directorate	Senior KAIZEN Consultant	2013, 9							
	Berhanu Dagnachew	Textile and Leather Directorate	Senior KAIZEN Consultant	2013, 11							
	Sientayehu Gashaw	Metal Directorate	Lead KAIZEN Consultant	Left (2013, 4)	○						
	Zemedkun Akleweg	Never transfer to EKI	-	Left (2012, 6)	○						
	Alehegn Melese	Higher Education Capacity Building Directorate	Assistant KAIZEN Consultant			2nd					
	Yidnekachew Terefe	Textile and Leather Directorate	KAIZEN Consultant	Left (2014, 9)		3rd				1st	
	Dagmawit Gizaw	Metal Directorate	KAIZEN Consultant	Left (2014, 9)		3rd	4th			1st	
	Dereje Rahmet	Higher Education Capacity Building Directorate	Lead KAIZEN Consultant	Left (2014, 9)						1st	

Appendix 2: Detailed State of Achievement by Indicators Listed in PDM

<table>
<tr><th>Project Purpose</th><th>Objectively Verifiable Indicators</th><th>Status of Achievement</th><th></th><th>Remarks</th></tr>
<tr>
<td>The system is established to disseminate quality and productivity improvement (KAIZEN) to private enterprises in a sustainable manner.</td>
<td>1) 60 qualified professionally trained EKI Consultants</td>
<td>
The status of developing KAIZEN consultants at EKI is as shown in the following table:
<table>
<tr><th>Training</th><th>Baseline</th><th>Achievement</th><th>Status</th><th>Remarks</th></tr>
<tr><td>1st batch</td><td>10 persons</td><td>10 persons</td><td>6 persons</td><td>4 persons retired</td></tr>
<tr><td>2nd batch</td><td>10 persons</td><td>9 persons</td><td>8 persons</td><td>2 persons retired (1 person retired during the training out of them)</td></tr>
<tr><td>3rd batch</td><td>15 persons</td><td>15 persons</td><td>14 persons</td><td>1 person retired</td></tr>
<tr><td>4th batch</td><td>15 persons</td><td>15 persons</td><td>15 persons</td><td></td></tr>
<tr><td>5th batch</td><td>15 persons</td><td>8 persons</td><td>8 persons</td><td></td></tr>
<tr><td>Total</td><td>65 persons</td><td>57 persons</td><td>51 persons</td><td></td></tr>
</table>
(Reasons for retirement consist mainly of job changes, entrepreneurship, and family circumstances.)

(Note) Periods for implementing the training for EKI consultants are as follows:
<table>
<tr><th>Training</th><th>Period of implementation (six months)</th><th>Achievement</th></tr>
<tr><td>1st batch</td><td>14 May 2012 - 2 November 2012</td><td>Completed</td></tr>
<tr><td>2nd batch</td><td>26 November 2012 - 27 May 2013</td><td>Completed</td></tr>
<tr><td>3rd batch</td><td>17 June 2013 - 13 December 2013</td><td>Completed</td></tr>
<tr><td>4th batch</td><td>17 February 2014 - 25 July 2014</td><td>Completed</td></tr>
<tr><td>5th batch</td><td>15 September 2014 – 13 February 2015</td><td>Under implementation</td></tr>
</table>
In addition to the above, results of the trainer development to carry out the training are as follows (not included in the achievements)
<table>
<tr><th>Training</th><th>Baseline</th><th>Achievement</th><th>Status</th><th>Remarks</th></tr>
<tr><td>Training to support the implementation of the training for EKI consultants/training for TTTs to be conducted for KU members</td><td>-</td><td>6 persons</td><td>4 persons</td><td>2 persons retired, out of whom 1 person moved to the ICT target company</td></tr>
<tr><td>Training to support the implementation of the training for TTTs to be conducted for EKI consultants</td><td>-</td><td>3 persons</td><td>3 persons</td><td></td></tr>
<tr><td>Total</td><td></td><td>9 persons</td><td>7 persons</td><td></td></tr>
</table>
</td>
<td>Since the 1st batch was delayed by 3.5 months behind the original plan, the project will be finished during the implementation of the 5th batch training. Therefore, technical transfer has been completed by the end of the 4th batch so that only the EKI is able to carry out the 5th batch.

15 trainees are expected to train in the fifth (final) batch of training, however, due to conduct an advanced KAIZEN training, EKI and the project decided that only 8 trainees are trained.</td>
<td>*It refers to the EKI consultants who received the six-month “training for EKI consultants,” responsible for the guidance to LMEs.</td>
</tr>
</table>

<table>
<tr><th>Project Purpose</th><th>Objectively Verifiable Indicators</th><th>Status of Achievement</th><th>Remarks</th></tr>
<tr><td></td><td>2) 170 qualified professionally trained TTTs</td><td>
The status of developing KAIZEN trainers is as shown in the following table:
<table>
<tr><th>Training</th><th>Number of sessions (baseline)</th><th>Number of sessions (achievement)</th><th>Number of graduates (baseline)</th><th>Number of graduates (achievement)</th></tr>
<tr><td>1st batch</td><td>4</td><td>4</td><td>20 persons</td><td>18 persons</td></tr>
<tr><td>2nd batch</td><td>4</td><td>4</td><td>20 persons</td><td>18 persons</td></tr>
<tr><td>3rd batch</td><td>3</td><td>3</td><td>15 persons</td><td>15 persons</td></tr>
<tr><td>4th batch</td><td>3</td><td>3</td><td>15 persons</td><td>12 persons</td></tr>
<tr><td>5th batch</td><td>5</td><td>5</td><td>25 persons</td><td>26 persons</td></tr>
<tr><td>6th batch</td><td>6</td><td>3</td><td>30 persons</td><td>16 persons*3</td></tr>
<tr><td>7th batch</td><td>6</td><td>3</td><td>30 persons*4</td><td>12 persons</td></tr>
<tr><td>8th batch</td><td>6</td><td>3</td><td>30 persons*4</td><td>14 persons</td></tr>
<tr><td>Total</td><td>37</td><td>28</td><td>185 persons</td><td>131 persons</td></tr>
</table>
In addition, the training for TVET was conducted at five regional cities as EKI's own activities, and the achieved number of trainees who participated in it is as follows:
<table>
<tr><th>No.</th><th>Region</th><th>Period (45 days)</th><th>Number of trainees</th></tr>
<tr><td>1</td><td>Addis Ababa</td><td>30 December 2013 - 24 February 2014</td><td>42 persons</td></tr>
<tr><td>2</td><td>Dire Dawa</td><td>2 November 2013 - 17 December 2014</td><td>38 persons</td></tr>
<tr><td>3</td><td>Harar</td><td>23 December 2013 - 8 February 2014</td><td>39 persons</td></tr>
<tr><td>4</td><td>Hawassa</td><td>23 December 2013 - 7 February 2014</td><td>27 persons</td></tr>
<tr><td>5</td><td>Mekelle</td><td>24 February 2013 - 13 May 2014</td><td>29 persons</td></tr>
<tr><td colspan="3">Total</td><td>175 persons</td></tr>
</table>
(Note) Periods for implementing the activities to develop KAIZEN trainers are as follows:
<table>
<tr><th>Training</th><th>Period of implementation (3 - 2.5 months)</th><th>Achievement</th></tr>
<tr><td>1st batch</td><td>6 February 2012 - 2 May 2012</td><td>Completed</td></tr>
<tr><td>2nd batch</td><td>6 June 2012 - 30 August 2012</td><td>Completed</td></tr>
<tr><td>3rd batch</td><td>15 October 2012 - 27 December 2012*5</td><td>Completed</td></tr>
<tr><td>4th batch</td><td>13 February 2013 - 26 April 2013</td><td>Completed</td></tr>
<tr><td>5th batch</td><td>10 July 2013 - 26 September 2013</td><td>Completed</td></tr>
<tr><td>6th batch</td><td>9 November 2013 - 9 January 2014</td><td>Completed</td></tr>
<tr><td>7th batch</td><td>13 March 2014 - 30 May 2014</td><td>Completed</td></tr>
<tr><td>8th batch</td><td>9 July 2014 - 25 September 2014</td><td>Completed</td></tr>
</table>
As shown in the left table, 131 KAIZEN trainers who received professional training have been developed. Furthermore, 306 KAIZEN trainers (131 persons + 175 persons = 306 persons) was developed, if actual achievements of TVET training *2 in the regional cities as the EKI's own activities are included here.
</td><td>
*1: It refers to TTTs who received the "training for TTTs" for 3 months (2.5 months), responsible for the guidance to MSEs.
*2: Three new EKI consultants who served as trainers in the training for TTTs become training instructors.
*3: The fact that the vehicle to be used for the training is not supplied from the Ethiopian side such as FeTA has been pointed out as a problem at the 4th JCC. The vehicle was not provided after all, and it was decided that the 6th batch was to be conducted with three sessions (15 persons). One person was added at the request of FeTA at a later date, and it accommodated a total of 16 persons.
*4: It was proposed that the total number of trainees for the seventh and eighth batches should be reduced from 60 persons to 30 persons due to the problem of vehicle provision by FeTA at the 5th JCC.
*5: The 1st and 2nd batches of training were implemented for three months in total: 1 month for CRT and 2 months for ICT, but the request was received from the dispatching agency for reducing the period of training as much as possible, since the burden of daily allowances and accommodation expenses to be paid to trainees is large. As a result, the training period was changed to a total of 2.5 months with the implementation period of 0.5 month for CRT from the 3rd batch or later.
</td></tr>
<tr><td></td><td>3) The system to disseminate quality and productivity improvement (KAIZEN) is clearly described in long-term KAIZEN dissemination plan.</td><td colspan="2">The KAIZEN dissemination system is described in the draft long-term plan, divided into the national growth strategy, the consistency with the industrial development plan, how the EKI structure should be, a strategy of KAIZEN dissemination, and an action plan. Refer to [Output 1] - Indicator 1) for the status of the long-term Plan.</td><td></td></tr>
</table>

<table>
<tr><th>Project Purpose</th><th>Objectively Verifiable Indicators</th><th>Status of Achievement</th><th>Remarks</th></tr>
<tr><td></td><td>4) 75% of enterprises participated in in-company trainings answer the results of consulting services as satisfactory</td><td>The result of the questionnaire survey that was conducted with the companies that participated in ICT is as follows:
[Result of the questionnaire survey with the LMEs that participated in ICT]
<table>
<tr><th>Training</th><th>Number of companies (Number of responses)</th><th>Companies that answered “satisfactory”</th><th>Proportion</th><th>Remarks (contents of questions)</th></tr>
<tr><td>1st batch</td><td>9 companies (5 companies)</td><td>5 companies</td><td>100 %</td><td></td></tr>
<tr><td>2nd batch</td><td>10 companies (8 companies)</td><td>8 companies</td><td>100 %</td><td></td></tr>
<tr><td>3rd batch</td><td>15 companies (11 companies)</td><td>11 companies</td><td>100 %</td><td></td></tr>
<tr><td>4th batch</td><td>13 companies (8 companies)</td><td>6 companies</td><td>75 %</td><td></td></tr>
<tr><td>5th batch</td><td>-</td><td>-</td><td>-</td><td></td></tr>
<tr><td>Total</td><td>47 companies (32 companies)</td><td>30 companies</td><td>93.75 %</td><td></td></tr>
</table>
[Result of the questionnaire survey with the MSEs that participated in ICT]
<table>
<tr><th>Training</th><th>Number of companies (Number of responses)</th><th>Companies that answered “satisfactory”</th><th>Proportion</th><th>Remarks (contents of questions)</th></tr>
<tr><td>1st batch</td><td>20 companies (5 companies)</td><td>4 companies</td><td>80 %</td><td>Evaluation of the level of retention for KAIZEN effects</td></tr>
<tr><td>2nd batch</td><td>17 companies (11 companies)</td><td>10 companies</td><td>90 %</td><td>Evaluation of the level of retention for KAIZEN effects</td></tr>
<tr><td>3rd batch</td><td>15 companies (15 companies)</td><td>15 companies</td><td>100 %</td><td>Level of satisfaction at KAIZEN results</td></tr>
<tr><td>4th batch</td><td>12 companies (9 companies)</td><td>9 companies</td><td>100 %</td><td>Level of satisfaction at KAIZEN results</td></tr>
<tr><td>5th batch</td><td>24 companies (14 companies)</td><td>14 companies</td><td>100 %</td><td>Level of satisfaction at KAIZEN results</td></tr>
<tr><td>6th batch</td><td>15 companies (6 companies)</td><td>6 companies</td><td>100 %</td><td>Level of satisfaction at KAIZEN results</td></tr>
<tr><td>7th batch</td><td>12 companies (10 companies)</td><td>10 companies</td><td>100 %</td><td>Level of satisfaction at KAIZEN results</td></tr>
<tr><td>8th batch</td><td>14 companies (12 companies)</td><td>12 companies</td><td>100%</td><td>Level of satisfaction at KAIZEN results</td></tr>
<tr><td>Total</td><td>129 companies (82 companies)</td><td>80 companies</td><td>96.2%</td><td></td></tr>
</table></td><td>*6: For LMEs that participated in ICT, a closed question was asked with the alternative of “Yes” or “No” on the level of satisfaction at KAIZEN results.
On the other hand, evaluation was conducted in 5 grades for MSEs that participated in ICT, in which “effects of KAIZEN and levels of KAIZEN retention” were measured until the 2nd batch was measured, and responses at the third level or above were determined as “satisfactory” for them. Responses at the fourth level or above are determined as “satisfactory” in the evaluation of “levels of satisfaction at KAIZEN results” from the 3rd batch or later.</td></tr>
<tr><td></td><td>5) Accumulation of good practices of participating enterprises as model cases</td><td>Several companies were selected out of the LMEs that had participated in ICT for EKI consultants and of the MSEs that had participated in ICT for TTTs at the end of each batch of ICT to accumulate cases of good practices for each batch. These cases plan to be finally described in the KAIZEN manual to be served for developing consultants and performing the guidance on KAIZEN at EKI in the future.</td><td></td></tr>
</table>

<table>
<tr><th>Project Purpose</th><th>Objectively Verifiable Indicators</th><th>Status of Achievement</th><th>Remarks</th></tr>
<tr><td rowspan="3">[Output1]
The institutional and organisational foundation of Ethiopian KAIZEN Institute (EKI) is established as the core and lead organisation for the dissemination of quality and productivity improvement (KAIZEN).</td><td>1) Short-and long-term plans for KAIZEN dissemination in place</td><td>It was agreed that only the long-term plan will be formulated at the 4th JCC, because documents corresponding to short-term plans pertaining to KAIZEN dissemination by EKI such as WP and BSC of EKI, etc. already existed, and a KAIZEN dissemination plan for the future would be important. After that, a series of revisions were made as appropriate in consultation with EKI on the draft long-term plan at every opportunity. A plan proposed by the JET: “A Draft of the Long-term Plan for KAIZEN Dissemination in Ethiopia” was submitted to EKI in April 2014, asking for its comments. After that, the “Project Concept Note, May 2014” containing the concept of the human resource development centre for business and industry in Africa, prepared by JICA and a proposed strategy and action plan: “KAIZEN Movement: Strategic Directions and Action Plan (2015-2025), May 2014”, prepared by EKI were distributed, and thus it became necessary to make their connections and adjustments with the abovementioned proposed plan. Therefore, a workshop was held jointly by the JET and the director class of EKI in July 2014 in order to ensure the consistency of these proposed plans. Eventually, considering JET’s ideas, the long-term plan was formulated by EKI and submitted to MoI and National KAIZEN Council in August, 2014. The draft will be submitted to National Planning Commission after the discussion of the second National KAIZEN Council will be held in January, 2015.</td><td></td></tr>
<tr><td>2) Monitoring and annual evaluation reports on progress of KAIZEN implementation and achievement</td><td>Necessary information is collected and analysed on progresses of this project on the basis of its monitoring system, and a project progress report is prepared at the frequency of twice a year with reporting to related parties on project progresses at JCC twice a year. The JCC is made the place of discussions for activities with unfavourable progresses to promote decisions on their countermeasures.

26 December 2011 : 1st JCC held
5 July 2012 : 2nd JCC held
12 December 2012 : 3rd JCC held
24 June 2013 : 4th JCC held
18 December 2013 : 5th JCC held
30 July 2014 : 6th JCC held
2 October 2014 : 7th (final) JCC held

Project Progress Report No. 1 : May 2012
Project Progress Report No. 2 : November 2012
Project Progress Report No. 3 : May 2013
Project Progress Report No. 4 : January 2014
Project Progress Report No. 5 : July 2014
Project Completion Report : December 2014</td><td></td></tr>
<tr><td>3) 600 attendants of KAIZEN seminars</td><td>Periods of holding KAIZEN seminars and the achieved number of their participants are as shown in the table below.
<table>
<tr><th>Seminar</th><th>Period of holding</th><th>Baseline</th><th>Achievement</th></tr>
<tr><td>1st seminar (Addis Ababa)</td><td>27 November 2012</td><td>200 persons</td><td>150 persons</td></tr>
<tr><td>2nd seminar (Nazret)</td><td>12 February 2013</td><td>80 persons</td><td>130 persons</td></tr>
<tr><td>3rd seminar (Hawassa)</td><td>23 May 2013</td><td>80 persons</td><td>127 persons</td></tr>
<tr><td>4th seminar (Dire Dawa)</td><td>5 December 2013</td><td>150 persons</td><td>148 persons</td></tr>
<tr><td>5th seminar (Bahir Dar)</td><td>24 April 2014</td><td>150 persons</td><td>146 persons</td></tr>
<tr><td>6th seminar (Mekelle)</td><td>9 August 2014</td><td>80 persons</td><td>135 persons</td></tr>
<tr><td>7th seminar (Addis Ababa)</td><td>10 October 2014</td><td>200 persons</td><td>158 persons</td></tr>
<tr><td>Total</td><td></td><td>940 persons</td><td>994 persons</td></tr>
</table>
</td><td>The total number of attendants is 994 persons. In addition, the seminar hosted by Professor Osada was held on 27 August 2013 with 104 participants. The total achieved number of attendants is 1,098 persons (994 +104 =1,098, if the latter is added.</td><td>Feature articles on KAIZEN are serialized in the newspapers, and feature programs on KAIZEN are broadcasted on the radio in addition to seminars. Apart from them, booklets introducing activities of EKI, magazines on KAIZEN, and brochures are handed out at seminars, etc.</td></tr>
</table>

<table>
<tr><th>Project Purpose</th><th>Objectively Verifiable Indicators</th><th>Status of Achievement</th><th>Remarks</th></tr>
<tr><td rowspan="4">[Output 2]
The system of human resource development for dissemination of quality and productivity improvement (KAIZEN) to large and medium enterprises (LMEs) is functionalised in EKI.</td><td>1) EKI Consultants' training curriculum in use</td><td>A training program was developed by May 2012 (before the start of the 1st batch). After that, revisions have been made on the basis of evaluations by companies and trainees at the end of each batch. Specifically, they include the addition of topics, the introduction of cases, the addition of specific procedures, etc. Technical transfer to EKI consultants have been advanced progressively, and then the EKI consultants took charge of all of the CRT activities in the 4th batch. The curriculum has been reviewed as required while checking EKI consultants' abilities and levels of proficiency and the final version of the curriculum was developed at the end of the 4th batch.</td><td></td></tr>
<tr><td>2) Course materials including customised KAIZEN Manuals for EKI Consultants</td><td>Contents of training have been revised on the basis of evaluation and feedback by trainees conducted after the end of each batch. The KAIZEN manual (for the version of advanced KAIZEN) was completed with a focus on problem solving including the compilation of practice cases such as specific good practices.</td><td></td></tr>
<tr><td>3) The criteria and methodology to assess skill level of EKI Consultants in place</td><td>Criteria and methods are established for evaluating the knowledge related to KAIZEN for the CRT, and a (ex-ante and ex-post) multiple-choice comprehension test has been carried out.
An ex-ante and ex-post self-evaluation questionnaire survey by trainees has been formulated and conducted in addition to qualitative evaluation by JICA experts in the evaluation ICT. In addition to the evaluation by trainees, criteria and a method have been established and practiced for evaluating trainers.</td><td>This evaluation table contains capabilities required for consulting.</td></tr>
<tr><td>4) 50 LMEs participated in in-company training</td><td>The number of LMEs that participated in ICT is as shown in the table below.
<table>
<tr><th>Training</th><th>Number of sessions (baseline)</th><th>Number of sessions (achievement)</th><th>Number of companies (baseline)</th><th>Number of companies (achievement)</th></tr>
<tr><td>1st batch</td><td>2</td><td>2</td><td>10 companies</td><td>9 companies</td></tr>
<tr><td>2nd batch</td><td>2</td><td>2</td><td>10 companies</td><td>10 companies</td></tr>
<tr><td>3rd batch</td><td>3</td><td>3</td><td>15 companies</td><td>15 companies</td></tr>
<tr><td>4th batch</td><td>3</td><td>3</td><td>15 companies</td><td>13 companies</td></tr>
<tr><td>5th batch</td><td>3</td><td>1</td><td>15 companies</td><td>4 companies</td></tr>
<tr><td>Total</td><td>13</td><td>11</td><td>65 companies</td><td>51 companies</td></tr>
</table>
Including the ongoing 5th batch, 51 LMEs have participated in ICT.
Due to implement an advanced KAIZEN in the 5th batch training, EKI and the Project has been chosen only 4 ICT companies including follow-up companies.</td><td>As for follow-up actions for ICT-participating companies, some companies are conducting the follow-up through each Directorate of EKI.</td></tr>
<tr><td rowspan="3">[Output 3]
The model system for EKI to foster TVET Trainers' Trainers (TTTs) is developed for quality and productivity improvement (KAIZEN) for micro and small enterprises (MSEs).</td><td>1) TTTs' training curriculum in use</td><td>A curriculum was prepared before the start of the 1st batch training, which has been revised as necessary.
New EKI members joined in CRT at the 5th batch or later, reviewing the curriculum portion that they were responsible for. Its original structure was utilized in the new curriculum while time allocation was reviewed for it. There is no change in it at the 6th batch or later.</td><td></td></tr>
<tr><td>2) Course materials including customised KAIZEN Manuals for TTTs</td><td>The review work of materials has been transferred to EKI consultants in stages from the 2nd batch. As for the Kaizen Manual, its fine revisions incorporating experiences in training have been made in each batch, and it was completed.</td><td>Only the rudimentary portion of knowledge of KAIZEN required by MSEs was translated in Amharic.</td></tr>
<tr><td>3) The criteria and methodology to assess skill level of TTTs in place</td><td>Criteria and methods are established for evaluating the knowledge related to KAIZEN for CRT, and an (ex-ante and ex-post) comprehension test is conducted. Evaluation planned to be conducted by JICA experts for each KIZEN technique in evaluating ICT, but its evaluation criteria were revised to qualitative elements (on-site observation skills, problem analytical skills, imagination, persuasiveness, leadership), because cases that could be addressed in ICT were limited, and available KAIZEN techniques were also limited to 3 - 5 types.
A review of evaluation criteria was made in terms of theoretical aspects and practical abilities at the 4th batch or later, evaluated by EKI consultants.</td><td></td></tr>
</table>

<table>
<tr><th>Project Purpose</th><th>Objectively Verifiable Indicators</th><th>Status of Achievement</th><th>Remarks</th></tr>
<tr><td></td><td>4) TTTs' training guideline shared with FeTA and ReTAs</td><td>A guideline for training trainers included in the KAIZEN manual was prepared under [Output 3] - Indicator 2), shared with FeTA and ReTAs.</td><td></td></tr>
<tr><td></td><td>5) 170 MSEs participated in in-company training</td><td>The number of MSEs that participated in ICT is as shown in the table below.
<table>
<tr><th>Training</th><th>Number of sessions (pan)</th><th>Number of sessions (achievement)</th><th>Number of baseline companies (plan)</th><th>Number of companies (achievement)</th></tr>
<tr><td>1st batch</td><td>4</td><td>4</td><td>20 companies</td><td>20 companies</td></tr>
<tr><td>2nd batch</td><td>4</td><td>4</td><td>20 companies</td><td>17 companies</td></tr>
<tr><td>3rd batch</td><td>3</td><td>3</td><td>15 companies</td><td>15 companies</td></tr>
<tr><td>4th batch</td><td>3</td><td>3</td><td>15 companies</td><td>12 companies</td></tr>
<tr><td>5th batch</td><td>5</td><td>5</td><td>25 companies</td><td>24 companies</td></tr>
<tr><td>6th batch</td><td>6</td><td>3</td><td>30 companies</td><td>15 companies</td></tr>
<tr><td>7th batch</td><td>6</td><td>3</td><td>30 companies</td><td>12 companies</td></tr>
<tr><td>8th batch</td><td>6</td><td>3</td><td>30 companies</td><td>14 companies</td></tr>
<tr><td>Total</td><td>37</td><td>28</td><td>185 companies</td><td>129 companies</td></tr>
</table>
Training for TVET has been conducted in five regional cities as the EKI's own activities, and the achieved number of companies that participated in it is as follows:
<table>
<tr><th>No.</th><th>Region</th><th>Period (45 days)</th><th>Number of companies</th></tr>
<tr><td>1</td><td>Addis Ababa</td><td>30 December 2013 - 24 February 2014</td><td>15 companies</td></tr>
<tr><td>2</td><td>Dire Dawa</td><td>2 November 2013 - 17 December 2014</td><td>12 companies</td></tr>
<tr><td>3</td><td>Harar</td><td>23 December 2013 - 8 February 2014</td><td>10 companies</td></tr>
<tr><td>4</td><td>Hawassa</td><td>23 December 2013 - 7 February 2014</td><td>16 companies</td></tr>
<tr><td>5</td><td>Mekelle</td><td>24 February 2013 - 13 May 2014</td><td>16 companies</td></tr>
<tr><td colspan="3">Total</td><td>69 companies</td></tr>
</table>
</td><td>The number is 198 companies (129 + 69 = 198) with the addition of 69 companies participating in ICT under the EKI's own activities.</td><td></td></tr>
</table>

Appendix 3: State of Achievement of the Planned Activities Listed in the PDM

Activities	Status of Achievement
1-1) Based on the discussion between relevant organisations and agencies, EKI develops short- and long-term KAIZEN dissemination plans and institutional frameworks including necessary budget, human resource allocation, business plans and service structure.	It was agreed that only the long-term plan will be formulated at the 4th JCC, because documents corresponding to short-term plans pertaining to KAIZEN dissemination by EKI such as WP and BSC of EKI, etc. already existed, and a KAIZEN dissemination plan for the future would be important. After that, a series of revisions were made as appropriate in consultation with EKI on the draft long-term plan at every opportunity. A plan proposed by the JET: "A Draft of the Long-term Plan for KAIZEN Dissemination in Ethiopia" was submitted to EKI in April 2014, asking for its comments. After that, the "Project Concept Note, May 2014" containing the concept of the human resource development centre for business and industry in Africa, prepared by JICA and a proposed strategy and action plan: "KAIZEN Movement: Strategic Directions and Action Plan (2015-2025), May 2014", prepared by EKI were distributed, and thus it became necessary to make their connections and adjustments with the abovementioned proposed plan. Therefore, a workshop was held jointly by the JET and the director class of EKI in July 2014 in order to ensure the consistency of these proposed plans. Eventually, considering JET's ideas, the long-term plan was formulated by EKI and submitted to MoI and National KAIZEN Council in August, 2014. The draft will be submitted to National Planning Commission after the discussion of the second National KAIZEN Council will be held in January, 2015.
1-2) EKI establishes a network with relevant organisations including the private sector for quality and productivity improvement (KAIZEN).	EKI mainly use the KAIZEN dissemination seminars to expand the local contacts and organizations to establish a network. Another ways for networking includes sending out EKI newsletters, opening EKI homepage, and contacting the mass medias such as newspapers, magazines, TV, and radio sports.
1-3) EKI evaluates the effectiveness of quality and productivity improvement (KAIZEN) to the enterprises which participate in in-company training.	The KAIZEN achievements can be evaluated by the evaluation of enterprises after ICT training and the Impact Survey. The evaluation of the KAIZEN Impact Study came out on the end of September 2014 and it concluded that the enterprises which implemented KAIZEN had the positive impact both in MSEs and LMEs.
1-4) EKI carries out necessary publicity activities including seminars to promote quality and productivity improvement (KAIZEN) and reviews the current situation and direction for awareness building including the awarding system.	The dissemination seminars were conducted seven times in six cities (Addis Ababa, Adama, Hawassa, Dire Dawa, Bahir Dar, Mekelle), in total more than 994 persons were participated. Also, EKI is independently working on the KAIZEN promotion in public relations through the KAIZEN magazine, newspapers, magazines, radio, and television, including the KAIZEN award.
2-1) EKI formulates the training plan for EKI Consultants.	The training plan for EKI Consultants were formulated, and revised on the basis of the trainee feed backed after implementing each batch. On the 5th batch, advanced KAIZEN training has been implemented as trial for the next phase project.
2-2) EKI develops the training curriculum for EKI Consultants.	Training curriculums for EKI Consultants for CRT and ICT have been revised on the basis of the results of the 1st - 3rd batch. After completion the 4th batch, the curriculum has finalized. In the 5th batch, selecting the best trainees who already had the training before, the advanced KAIZEN training (such as TPM, Total Cost Management has been included) has been implementing for the ICT enterprises which has been selected from the prioritized sectors.
2-3) EKI develops course materials of the training for EKI Consultants (including the customisation of KAIZEN Manual based on various needs of specific sub-sectors and the translation into Amharic).	EKI develops course materials of the training for EKI Consultants (including the customization of KAIZEN Manual based on various needs of specific sub-sectors and the translation into Amharic). In the same way as the training curriculum, the training course materials for EKI Consultants have been revised on the basis of the results of the 1st to the 3rd batch. After completion the 4th batch, the training course materials for EKI Consultants have finalized. Also, based on the accumulated knowledge, new KAIZEN manual focused on the high level KAIZEN skills was completed.
2-4) EKI establishes the criteria and methodology to assess skill levels of EKI Consultants and undertakes initial assessment.	EKI established the criteria and methodology to assess skill levels of EKI Consultants and undertakes initial assessment. For the criteria and methodology to assess the CRT, the level of understanding is assessed through the exam given before and after the CRT. Regarding the ICT, the methodology to assess the level of trainees has been used through the observation of the experts and self-evaluation of the trainees collected before and after the ICT. Another criteria and methodology to evaluate the trainees have been also established.
2-5) EKI establishes the selection criteria and methodology, and selects LMEs which participate in in-company training in collaboration with the institutes and directorates of the Ministry of Industry (MoI).	EKI established the selection criteria and methodology, and selects LMEs which participate in in-company training in collaboration with the institutes and directorates of the Ministry of Industry (MoI). Selection criteria and methodology of LMEs which participate in ICT have been revised after each batch and finalized in the 3rd batch and continuancely utilized.
2-6) EKI conducts classroom training for EKI Consultants.	EKI conducts classroom training for EKI Consultants. Technical transfer to EKI Consultants in CRT has been completed; the 4th batch CRT was conducted 100% by EKI consultant. On the fifth batch, the intensive seminars were held by the Japanese experts focus on specific subjects.

Activities	Status of Achievement
2-7) EKI conducts in-company training for EKI Consultants.	EKI conducted in-company training for EKI Consultants. The ICT trainer's function has been transferred from Japanese experts to the EKI consultants. From the 4th batch, EKI selected the enterprises independently. In the ICT conducted in enterprises, six EKI staff from the past ICT was selected as trainers. Two Japanese experts and one EKI director backed up the training. EKI Consultants are expected to take initiatives to conduct ICT. On the fifth batch training, selecting the trainees as follow-up who already had the training before, advanced KAIZEN training has been conducting.
2-8) EKI examines how knowledge and skills acquired through the training course are effectively utilized on the ground by the EKI Consultants.	EKI examined how knowledge and skills acquired through the training course are effectively utilized on the ground by the EKI Consultants. The questionnaire study was conducted for 34 EKI Consultants who completed the training in April 2014. These consultants have been applying the basic KAIZEN methods such as 5S and MUDA elimination to the enterprises in charge.
2-9) EKI undertakes periodical evaluations of the achievement levels of EKI Consultants.	EKI undertakes periodical evaluations of the achievement levels of EKI Consultants. After completion of each ICT batch, the achievement level of EKI Consultants is evaluated as referred to 2-4.
2-10) EKI monitors and evaluates the results of the activities from 2-1 to 2-9.	KI monitors and evaluates the results of the activities from 2-1 to 2-9. After completion of each batch, accomplishment level of selection of enterprises, CRT and ICT and direction of improvement are reported and recorded in the progress report, and obtained JCC approval.
3-1) EKI formulates the plan of model training for TTTs based on consultation with Federal TVET Agency (FeTA) and Regional TVET Agencies (ReTAs).	From the 6th batch, the responsibilities of the formulation of the plan of model training have been transferred to the EKI Consultants.
3-2) EKI develops the training curriculum for TTTs.	EKI developed the training curriculum for TTTs. After being revised twice (the 2nd batch and 5th batch), the training curriculum for TTTs has finalized.
3-3) EKI develops the course materials of training for TTTs (including the customisation of KAIZEN Manual for MSEs and the translation into Amharic).	EKI developed the course materials of training for TTTs (including the customization of KAIZEN Manual for MSEs and the translation into Amharic). From the 2nd batch, revision of the training course materials for TTTs has been gradually transferred to the EKI Consultants and completed 100% at the 8th batch. As for the revision of KAIZEN manual, training experience of each batch is included in the revised version, and has been completed.
3-4) EKI establishes the methodology to assess skill levels of TTTs and sets the selection criteria of training participants with the support of FeTA.	EKI established the methodology to assess skill levels of TTTs and set the selection criteria of training participants with the support of FeTA. The methodology to assess skill level of TTTs and setting the selection criteria of training participants are entrusted to FeTA. (As referred to 3-10)
3-5) EKI selects training participants and undertakes initial assessment in collaboration with ReTAs.	EKI selected training participants and undertook initial assessment in collaboration with ReTAs where the trainees came from. For each batch, one month before starting training participants were selected with ReTAs, and in the beginning of CRT, the initial evaluation is given to the selected trainees.
3-6) EKI establishes the selection criteria and methodology to select MSEs which participate in in-company trainings with the support of Federal MSE Development Agency (FeMSEDA).	EKI established the selection criteria and methodology to select MSEs and TVETs which participate in in-company trainings with the support of Federal MSE Development Agency (FeMSEDA). There was no change on the selection methodology to select MSEs and TVETs since the beginning of the 1st batch, but the selection criteria has been revised at the each batch and finalized at the 3rd batch.
3-7) EKI selects MSEs which participate in in-company training in collaboration with Regional MSE Development Agencies (ReMSEDAs).	EKI selected MSEs and TVETs which participate in in-company training in collaboration with Regional MSE Development Agencies (ReMSEDAs). Based on the selection criteria revised by EKI Consultants and Japanese experts, appropriate enterprises to conduct ICT were selected, however, the number of the criteriad enterprises were limited. Therefore the selection criteris were eased partly.
3-8) EKI conducts classroom training for TTTs.	EKI conducted classroom training for TTTs. After the 3rd batch, function of conducting CRT has been gradually transferred to EKI Consultants. At the 8th batch, the transfer has been completed.
3-9) EKI conducts in-company training for TTTs.	EKI conducted in-company training for TTTs. After the 3rd batch, the trainer's function has been gradually transferred to EKI Consultants. At the 8th batch, the transfer has been completed.
3-10) EKI evaluates the achievement levels of trained TTTs.	EKI evaluated the achievement levels of trained TTTs. Methodology for assessment and evaluation criteria to measure the knowledge of KAIZEN in CRT has been established and the examination to measure the level of understanding before and after CRT was conducted. Although the Japanese experts were planning to evaluate the different KAIZEN originally, the evaluation criteria were changed to the different (stable) elements (observation in the site, analytical skill of problems, imaginations, leadership) because the introduction of the case study and the KAIZEN skills were limited.
3-11) EKI monitors and evaluates the results of the activities from 3-1 to 3-10, and develops the TTTs' training guideline to share with FeTA and ReTAs.	EKI monitored and evaluated the results of the activities from 3-1 to 3-10, and developed the TTTs' training guideline to share with FeTA and ReTAs. Regarding the progress of this project, necessary information was collected and analyzed based on the monitoring system. Every half a year, the progress report had been made, and shared with the related persons at JCC. Regarding the TTTs and ICT participating enterprises, follow up study was conducted. The training guidelines shared with Feta and ReTA were included in the KAIZEN manual.

Appendix 4: Agreement for Handing Over of Equipment ①

CERTIFICATE OF DONATION/HANDOVER

PROJECT TITLE: *"PROJECT FOR CAPACITY BUILDING FOR DISSEMINATION OF QUALITY AND PRODUCTIVITY IMPROVEMENT (KAIZEN)"*

This is to certify that the vehicles listed in the attached list (Annex I) for the above-mentioned Project have been handed over properly as of June 13, 2012 to Ethiopian KAIZEN institute (hereinafter referred to as "EKI") as per the agreement reached between Japan International Corporation Agency (hereinafter referred to as "JICA") and EKI as stipulated in the "Record of Discussions" signed on September 15, 2011.

The ownership of the vehicles shall be transferred to EKI upon signing this certificate by the representative of EKI and JICA Ethiopia Office, and EKI shall take the necessary procedures for ownership transferring including payment of taxes, insurance and any other fees associated with the operation of the vehicles.

JICA and EKI have agreed that the vehicles shall be used solely for the purpose of the Project, and daily operation of the vehicles has to be arranged by EKI and JICA Expert Team collaboratively during the Project period.

Koji Ota
Chief Representative
Japan International Cooperation Agency (JICA) Ethiopia Office

Getahun Tadesse
Director General
Ethiopian KAIZEN Institute (EKI)

June 13, 2012
Addis Ababa, Ethiopia

Annex I: List of Equipment

No.	Name of Item	Qty.	Place of Delivery	Date of Handover
1	TOYOTA LAND CRUISER HARD TOP STATION.WAGON(HZJ76L-RKMRS) Chassis No. JTEEB71J80-7015526 Engine No. 1HZ-0699645	1	Addis Ababa	June 13, 2012
2	TOYOTA LAND CRUISER HARD TOP STATION.WAGON(HZJ76L-RKMRS) Chassis No. JTEEB71J00-7015553 Engine No. 1HZ-0699828	1	Addis Ababa	June 13, 2012
3	TOYOTA HIACE COMMUTER MINI BUS (KDH202L-REMDY) Chassis No. JTFJS02P20-0028057 Engine No. 2KD-5616464	1	Addis Ababa	June 13, 2012





Appendix 5: Agreement for Handing Over of Equipment ②

CERTIFICATE OF HANDOVER
BETWEEN
JAPAN INTERNATIONAL COOPERATION AGENCY
AND
Ethiopian KAIZEN Institute
ON
The Project on Capacity Building for Disseminating Quality and Productivity Improvement (KAIZEN)

This is to certify that the Equipment in the attached list (hereinafter referred to as 'the Equipment') for the Project on Capacity Building for Disseminating Quality and Productivity Improvement (KAIZEN) (hereinafter referred to as 'the Project') have been handed over properly as of 9th October, 2014, to Ethiopian KAIZEN Institute as per the agreement reached between the two sides on 9th October.

Ethiopian KAIZEN Institute has agreed that the Equipment shall be used for future activities to assure the sustainability of the Project.

Ethiopian KAIZEN Institute shall take all responsibilities for ownership transferring including payment of tax, insurance and any other fees.

9th October, 2014
Ethiopian KAIZEN Institute

Mr. Kimiaki JIN
Chief Representative
Ethiopia Office
Japan International Cooperation Agency

Mr. Getahun Tadesse
General Manager
Ethiopian KAIZEN Institute

1

List of Equipment

No.	Type	Model	Registration No.	Place of Delivery	Date of Handover
1	Copy Machine	Canon iR-2525 Digital Photocopier *	11-3-003477	EKI	9th,Oct .2014
2	Video Camera 1	Sony Video Camera/HDR-PJ30E	11-3-002736	EKI	9th,Oct .2014
3	Video Camera 2	Sony Video Camera/HDR-PJ30E	11-3-002737	EKI	9th,Oct .2014
4	Video Camera 3	Sony Video Camera/HDR-PJ30E	11-3-002738	EKI	9th,Oct .2014
5	Video Camera 4	Sony Video Camera/DCR-SR21E	12-3-001849	EKI	9th,Oct .2014
6	Video Camera 5	Sony Video Camera/DCR-SR21E	12-3-001850	EKI	9th,Oct .2014
7	Video Camera 6	Sony Video Camera/DCR-SR21E	14-3-000074	EKI	9th,Oct .2014
8	Projector 1	Sony Data Projector/VPL-EX100	11-3-002729	EKI	9th,Oct .2014
9	Projector 2	Sony Data Projector/VPL-EX100	11-3-002730	EKI	9th,Oct .2014
10	Projector 3	Sony Data Projector/VPL-EX100	12-3-001853	EKI	9th,Oct .2014
11	Projector 4	Sony Data Projector/VPL-EX100	12-3-001854	EKI	9th,Oct .2014
12	Projector 5	Sony Data Projector LCD DX 100	13-3-000236	EKI	9th,Oct .2014
13	Projector 6	Sony Data Projector LCD DX100	13-3-000237	EKI	9th,Oct .2014
14	Projector 7	Sony Data Projector LCD DX 100	13-3-000238	EKI	9th,Oct .2014
15	Projector 8	Sony Data Projector LCD DX 100	13-3-000239	EKI	9th,Oct .2014
16	Digital Camera 1	Canon SX150 IS with 4MB memory card	N/A	EKI	9th,Oct .2014
17	Digital Camera 2	Canon SX150 IS with 4MB memory card	N/A	EKI	9th,Oct .2014

* without finishes which will be delivered from maintenance shop.

18	Digital Camera 3	Canon SX150 IS with 4MB memory card	N/A	EKI	9th,Oct .2014
19	Digital Camera 4	Sony 14.1 DSC-W560 with 4MB memory card and its battery charger	N/A	EKI	9th,Oct .2014
20	4 Battery Charger	4 Battery chargers and 14 rechargeable batteries	N/A	EKI	9th,Oct .2014

<Note> The following equipment procured by the Project will remain as JICA's equipment.

	Type	Model	Registration No.
1	Laptop PC 1	Toshiba Laptop/Satellite C655-S5312 System Unit	11-3-002731
2	Laptop PC 2	Toshiba Laptop/Satellite C650-Z1511 System Unit	11-3-002732
3	Laptop PC 3	Toshiba Laptop/Satellite C660-162 System Unit	11-3-002733
4	Laptop PC 4	HP Qualcomm Atheros QCWB335	To be registered
5	Laptop PC 5	Toshiba Laptop/Satellite C660-162 System Unit	11-3-002735
6	Laptop PC 6	Toshiba Laptop/Satellite C660-162 System Unit	11-3-003479
7	Laptop PC 7	Toshiba Laptop/Satellite C660-162 System Unit	11-3-003480
8	Laptop PC 8	Toshiba Laptop/Satellite C660-162 System Unit	11-3-003481
9	Laptop PC 9	Toshiba Laptop/Satellite C660-162 System Unit	11-3-003482
10	Laptop PC 10	Toshiba Laptop/Satellite C660-162 System Unit	12-3-001851
11	Laptop PC 11	Toshiba Laptop/Satellite C660-162 System Unit	12-3-001852

Appendix 6: Totaled Results of Questionnaires to MSc Program Participants

(Responses received from 21 out of 23 participants)

I. MSc Program Management

Q1. Reason for participating in the MSc Program (Respondents: 21)

1. I was told to participate by my boss (0)
2. I was invited to participate by EKI (7)
3. I applied of my own volition (14)
4. Others (0)

Q2. When did you receive information on the MSc Program? (Respondents: 21)

1. Before applying for the program (1)
2. Before the start of the program (6)
3. After the start of the program (13)
4. Others (1)

Q3. Do you understand the conditions for graduating the MSc Program? (Respondents: 21)

1. Yes, I understand them well (2)
2. Yes, I understand them (13)
3. I understand them but am not sure (5)
4. Others (1)

Q4. In the EKI MSc Program, week-long intensive lectures are conducted on each subject. Is this appropriate? (Respondents: 21)

1. Yes, it is appropriate (10)
2. It's too short (11)
3. It's too long (0)
4. Other (0)

Q5. Comments and proposals concerning the MSc Program

- **The schedule for the Master's course is not clearly notified.** (Because the schedule for the final two classes of the semester was not decided and some of the students had to give priority to their work, they were unable to sit the lessons. In order for the participants to perform their regular duties without becoming overloaded, it is necessary to notify the schedule in advance. In order to ensure that participants can safely take part in the program, the schedule should be arranged not to overlap with work in EKI.)
- **Time for each class is too short.** (It is necessary to review the schedule for program lectures and drills. Because the time spent on lessons is too short, the participants have difficulty understanding correctly. There is also not enough time allotted to drills.)
- **There are not enough resources for learning.** (EKI should provide students participating in the Master's program with the necessary resources for learning, for example, means of transport, free time for drills, and so on.)
- **There are students of differing backgrounds.** (Admission examinations were not conducted before the start of the Master's program. Students have different study backgrounds, for example, social studies, engineering and so on. Unless these differences are addressed, the gap in capability arising from the differences in backgrounds will continue to grow.)

II. Contents of each course in the MSc Program

Dr. Fasil **・ Kaizen Philosophy** **・ MUs and 5S Principles and Practices**	**Q6−a. Did the contents of lessons meet your expectations?** (Respondents: 20) **Kaizen Philosophy:** 1. Yes, very much. (7) 2. Yes, they did (12) 3. No, not very much (0) 4. No, they did not (1) 5. Other (0) **MUs and 5S Principles and Practices:** 1. Yes, very much. (4) 2. Yes, they did (16) 3. No, not very much (0) 4. No, they did not (0) 5. Other (0)

	Q6−b. Were the lesson contents useful for your work? (Respondents: 21) **Kaizen Philosophy:** 1. Yes, very useful (13) 2. Yes, they were useful (8) 3. No, not very useful (0) 4. No, they weren't useful (0) 5. Other (0) **MUs and 5S Principles and Practices:** 1. Yes, very useful (13) 2. Yes, they were useful (8) 3. No, not very useful (0) 4. No, they weren't useful (0) 5. Other (0)
	Q6−c. Were the teaching materials appropriate? (Respondents: 21) **Kaizen Philosophy:** 1. Yes, very appropriate (5) 2. Yes, they were appropriate (14) 3. No, not very appropriate (2) 4. No, they were not (0) 5. Other (0) **MUs and 5S Principles and Practices:** 1. Yes, very appropriate (5) 2. Yes, they were appropriate (14) 3. No, not very appropriate (2) 4. No, they were not (0) 5. Other (0)
	Q6−d. Were there enough teaching materials? (Respondents: 21) **Kaizen Philosophy:** 1. Yes, there were plenty (3) 2. Yes, there were enough (16) 3. No, there weren't quite enough (2) 4. No, there weren't enough (0) 5. Other (0) **MUs and 5S Principles and Practices:** 1. Yes, there were plenty (3) 2. Yes, there were enough (15) 3. No, there weren't quite enough (3) 4. No, there weren't enough (0) 5. Other (0)
	Q6−e. Comments and proposals concerning Kaizen Philosophy/MUs and 5S Principles and Practices ・ **Introduction to success stories is wanted.** (The lectures were interesting, but we wanted more actual cases to be introduced.) ・ **The lecturers were good.** (It was good to have instruction and sharing of experience by teachers with different viewpoints). ・ **Time for lessons is too short.** (In particular, there is not enough time allotted to drills.) ・ **We want more teaching materials to be introduced.** (We want more materials (handouts) or books to be provided. We also want video materials to be introduced.) ・ **Proposal to unite two subjects** (It would be better to combine Kaizen Philosophy and MUs and 5S Principles and Practices into a single class and treat it as a course with three credits.)

Prof. Solomon & Prof. Bekalu **・Work Study and Plant Layout**	**Q7−a. Did the contents of lessons meet your expectations?** (Respondents: 21) 1. Yes, very much. (2) 2. Yes, they did (15) 3. No, not very much (3) 4. No, they did not (1) 5. Other (0)
	Q7−b. Were the lesson contents useful for your work? (Respondents: 19) 1. Yes, very useful (1) 2. Yes, they were useful (15) 3. No, not very useful (2) 4. No, they weren't useful (1) 5. Other (0)
	Q7−c. Were the teaching materials appropriate? (Respondents: 21) **Kaizen Philosophy:** 1. Yes, very appropriate (5) 2. Yes, they were appropriate (14) 3. No, not very appropriate (2) 4. No, they were not (0) 5. Other (0)
	Q7−d. Were there enough teaching materials? (Respondents: 21) **Kaizen Philosophy:** 1. Yes, there were plenty (3) 2. Yes, there were enough (16) 3. No, there weren't quite enough (2) 4. No, there weren't enough (0) 5. Other (0)
	Q7−e. Comments and proposals concerning Work Study and Plant Layout ・ **We want more case studies to be introduced.** (It is very important to acquire differing case studies). ・ **Time for lessons is too short**. (The backgrounds of students are different. Because the contents are new, more lesson time is needed to achieve understanding). ・ **There are not enough teaching materials.** (In addition to Power Point lectures, textbooks are needed). ・ **Others** (The lessons by EKI employees were informative but not very stimulating).
III.Overall assessment	
Q8. How do you assess the overall MSc Program? (Respondents: 21) 1. Very satisfactory (1) 2. Satisfactory (17) 3. Can't say either way (3) 4. Unsatisfactory (0) 5. Other (0)	
Q9. Comments and proposals concerning the MSc Program contents ・ **We want the program contents to be further enhanced.** (The MSc Program should cover more subjects, for example, Productivity Management, Introduction to Leadership, Industrial Psychology, Analysis and Control of Manufacturing System, Quality Engineering, Project Management, observation tour in Japan, and so on. Concerning Quality Control Circles and 7QC tools, these should be treated as a single subject under the title of Toyota Production System (TPS).) ・ **We want the teachers to be enhanced.** (It is also necessary to have lessons conducted by Japanese teachers. We want to have lessons conducted by teachers who have Master's degrees and teachers who have corporate experience). ・ **We want the title of the Master's program to be changed to Management Engineering (major in Kaizen).**	

IV. Others

Q10. Age (Respondents: 20)

1. 20~25 (3)
2. 25~30 (13)
3. 30~35 (3)
4. 35~40 (1)

Q11. Gender (Respondents: 20)

1. Female: 7
2. Male: 13

Q12. EKI affiliated department (Respondents: 18)

Affiliated Department	Number of Persons
Agro Directorate	4
Chemical Directorate	1
Metal Directorate	1
Textile & Leather Directorate	1
Higher Education Institutes / Capacity Building Directorate	1
Service Sector Improvement Directorate	2
TVET Capacity Building Directorate	6
Others (FeTA)	2
Total	18

Q13. EKI work level

Work Level	Number of Persons
Director	2
Lead Consultant	2
Senior Consultant	3
Consultant	1
Assistant Consultant	7
Junior Consultant	3
Others (FeTA Expert)	1
Total	19

Q14. Educational background

University	Major	Number of Persons
Bahir Dar University	Industrial engineering	7
Bahir Dar University	Textile engineering	1
Bahir Dar University	Mechanical engineering	1
Bahir Dar University	-	2
Adama University	Food processing	2
Mekelle University	Industrial engineering	1
Mekelle University	-	1
Addis Ababa University	Mechanical engineering	1
Wolega University	Applied Chemistry	1
Others	Chemical engineering	1
–	–	18

Q15. Years of service in EKI (Respondents: 19)

1. 0~1 year (0)
2. 1~2 years (9)
3. 2~3 years (7)
4. More than 3 years (3)

Appendix 7: Basic Information on Higher Education in Ethiopia (Abstract)

I. Basic Statistics in the Education Field[1]

Elementary school (1st~8th grades) attendance rate:	95.3% (gross), 85.9% (net) (2012/13)
Lower secondary school (9th~10th grades) attendance rate:	38.4% (gross) (2012/13)
Preparatory School (11th~12th grades) admissions:	358,493 (female 44.4%) (2012/13)
TVET admissions:	237,877 (female 51.3%) (2012/13)
University admissions:	553.848 (female 30.0%) (2012/13)
University graduates:	79,073 (female 28.6%) (2012/13)
Graduate School admissions:	31,304 (female 20.6%) (2012/13)
Graduate School graduates:	6,424 (female 14.9%) (2012/13)
Literacy rate:	54.98% (2007) (UNESCO)
Education expenditure as a ratio of GDP:	4.7% (2010) (UNESCO)
Education budget ratio in national budget:	25.2% (2012/13)
Higher education ratio in education budget:	21.4% (2012/13)

II. Education System

Compulsory education comprises elementary school grades 1 to 8 (7 years ~ 14 years) and lower secondary first cycle grades 9 and 10 (15 ~ 16 years). Subsequent options consist of lower secondary second cycle grades 11 and 12 (17 ~ 18 years), which are necessary for advancing to university, three years of Technical School and Junior College (17~19 years), and three years of Vocational School and Junior College (17~19 years).

Universities, Technical and Vocational Education and Training (TVET) schools, and Colleges of Teacher Training (CTT) are placed under the jurisdiction of the Ministry of Education. Regarding TVET education, central government TVET grants authority to the regional TVETs to implement curriculums that correspond to each area's conditions.

The higher education field in Ethiopia comprises Bachelor's, Master's and Doctoral programs, and as of 2012/2013 there are 34 public universities[2]. Out of 553,848 university graduates in 2012/2013, those from public universities accounted for 85.6% and those from private universities for 14.4%. University department programs last for three years, four years, or longer and include medical department (MD) and department of veterinary medicine (DVM).

III. Higher Education

The ratio of almost all sub-sectors in the education field has been growing in recent years. In the higher education sector too, admissions to universities have been growing at 15.5% on average, while admissions to graduate schools have been growing at 32.6% on average. As of December 2012, there are 34 public universities, seven private universities, and 52 polytechnics. At least one university is established in each of nine regions other than Gambela[3]. The increasing number of regional universities and establishment of new private universities in the regions have increased the university admission rate[4].

The government wants to achieve a ratio of humanities students to science and technology students in public universities of 70 to 30, and the figure in 2012/13 was 74 to 26.

- **The breakdown of students entering graduate schools in 2012/2013 was as follows:**
  (Public university) Admissions to Master's programs 25,102, admissions to Doctoral programs 3,165
  (Private university) Admissions to Master's programs 3,036

- **The breakdown of 6,424 graduates from graduate schools in 2012/2013was as follows:**
  (Public university) Graduates of Master's programs 5,960, graduates of Doctoral programs 71
  (Private university) Graduates of Master's programs 393

As for the number of teachers, this has doubled over the past five years from 11,028 to 23,905.

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1 Education Statistics Annual Abstract (2012/2013) November, P6 Table 2-2 The Education Sector Development Program IV (ESDP IV) Key Indicators

2 31 schools are under the Ministry of Education, while the remaining ones are the Ethiopian Civil Service University, Defense University College, and Kotebe College of Teachers Education.

3 Questions are being raised over this rapid expansion in higher education agencies, concerning not only the quality of education and resources of universities, but also concerning the employment of graduates. Ethiopia: Expanding and improving higher education, 22 August University World News Africa Edition Issue 60

4 Ethiopia: Expanding and improving higher education, 22 August University World News Africa Edition Issue 60

- **Breakdown of teachers in higher education agencies in 2012/2013[5]:**
  High school graduates (employees) 3.9%, university graduates 29.3%, medical department and department of veterinary medicine graduates 7.0%, graduates of Master's programs 47.9%, graduates of Doctoral programs 10.8%, others 1.1%

- **Top ranking public universities and graduate schools in terms of number of admissions:**
  Addis Ababa University (50,853), Jimma University (39,589), Debre Markos University (33,220)

- **Top ranking public universities and graduate schools in terms of number of graduates:**
  Addis Ababa University (9,585), Hawassa University (5,482), Haramaya University (5,216)

- **Top ranking public universities in terms of number of teachers:**
  Haramaya University (2,353), Addis Ababa University (2,330), Mekele University (1,543)

Academic Background of Faculty at Addis Ababa University 2012/2013 [6]

Credential	University Overall (number of teachers)	Business and Economics (Band) (number of teachers)
Diploma	79	-
Bachelor	331	9
MD/MDV	143	-
Master	1058	171
PhD.	528	36
Others	60	-
Total	2199	216

[5] The ratios of teachers in higher education agencies proposed by the Higher Education Relevance and Quality Agency (HERQA), which was launched in 2003, are as follows: Doctors 30%, Masters 50%, and Bachelors 20%. According to statistics for 2012/13, leaving aside medical department and department of veterinary medicine, the ratios were Doctors 13%, Masters 54.7%, and Bachelors 32.2%, although the figures at Addis Ababa University are closer to the recommended values, i.e. Doctors 27.6%, Masters 55.3%, and Bachelors 17.1%.

[6] Education Statistics Annual Abstract (2012/2013) November, 290p. 1st semester

Appendix 8: List of Host Enterprises for ICT for EKI Consultants

No.	Batch	Company Name	Type	5S, MUDA		Problem solving			EKI Follow-up	Active KPTs	Acceptance of Media	Other remarks
				Evaluation	Remarks	Topics	Evaluation	Remarks				
1	1st	Crystal Tannery	Leather	4	Effects were seen in the model workplace.	Shortening of delivery time, improvement of boiler efficiency	3	A plan of countermeasures was produced, but parts of it are on hold.				
2		Excel Plastic PLC	Chemical	4	Effects were seen in the model workplace.	Water leak Kaizen, shortening of mold replacement time	5	Concerning mold replacement time, a revolutionary idea led to a dramatic effect. Water leak countermeasures are also smoothly being implemented.		¡		Receipt of 2013 Kaizen Award AA Seminar presentation
3		Fafa Food S.C.	Agro	4	Effects were seen in the model workplace.	Visualization of control in manufacturing process and equipment maintenance	4	Progress was made in visualization of maintenance. Extension to the QC process sheet has also been seen.				
4		HH Steel Sections PLC	Metal	3	Communication between the owner and management was poor, but steps were implemented up to the sale of unnecessary items.	Improvement of machine operating rate	2	Not much progress was made in line analysis due to frequent process stoppages. The company made no presentation at the symposium either.				
5		Kana Edible Oil	Agro	4	Vigorous initiatives were seen at the start, but there was a subsequent tail-off.	Improvement of oil press yield, reduction of machine breakdown rates	3	There was a significant difference due to time spent on sampling data; however, work did not reach the stage of narrowing down factors and implementing measures.			¡	
6		Pasqua Giuseppe PLC	Metal	4	It showed enthusiasm with the launch of Kaizen Day and so on.	Shortening of delivery time for main products	5	As a result of ongoing measures based on company strategy, dramatic improvement of 8 days → 5 days → 3 days was seen in representative product models.		¡		AA Seminar presentation
7		Repi Soap and Detergent	Chemical	3	In the model workplace, Kaizen was seen in the supplementary items warehouse.	Elimination of Muda was set as the topic.	4	Introduction of hand presses generated results.				
8		Shoa Ginning	Textile	3	Effects have started to appear in the model workplace.	Measures to counter gear breakage	4	A maintenance system based on the company's demands was proposed.				
9		Wossi Garment	Textile	3	Results appeared, but the owner discharged employees.	Reduction of personnel turnover	3	A plan for a motivation improvement system was prepared, however, it couldn't be implemented and verified due to poor labor relations.				

No.	Batch	Company Name	Type	5S, MUDA		Problem solving			EKI Follow-up	Active KPTs	Acceptance of Media	Other remarks
				Evaluation	Remarks	Topics	Evaluation	Remarks				
10	2nd	Afia Food Complex	Agro	3	Progress was made but there was a limit due to busyness of the responsible staff.	Prevention of powder leaks from flour sieve equipment	3	A plan of countermeasures was prepared but it was only partially implemented.				
11		Erkab Leather	Leather, other	4	The initial target was attained.	Improvement of productivity in the bag sewing process	3	Efforts were made to improve flow between processes, but implementation was delayed due to suspension of ICT.		¡		
12		Ethiopian Iron and Steel Factory	Metal	3	Measures on the company side were slow.	Reduction of nonconforming products in the continuous casting process	3	A plan of countermeasures (setting of operating conditions) using unique technologies was presented. Implementation and verification are awaited.				
13		Ethio-Polymer PLC	Chemical	3	Progress was made but there was a limit due to busyness of the responsible staff.	・ Reduction of external diameter nonconformities in extrusion PVC tube ・ Extrusion molding work standardization (SOP)	4	A plan of countermeasures has been prepared, but implementation is awaited. Implementation of documentation results is awaited.		¡		
14		Geosynthetic Industrial Works PLC	Chemical	4	Results were achieved as planned.	Reduction of nonconforming PVC pipe products	5	As a result of combining QC Story with unique technology, the poor appearance issue was improved. Measures are partially ongoing.		¡	¡	
15		Kotebe Metal Tools Factory	Metal	4	Measures were advanced as planned and the target was almost attained. A layout plan was also presented.	SOP system construction: Reduction of poor quality in the sickle manufacturing process based on work standardization	5	16 documents including QC process sheet have been finished. Some are in implementation; some are pending.		¡	¡	Receipt of 2013 Kaizen Award
16		Osaka Steel PLC	Metal	4	The initial targets were attained.	Energy saving in the hot-dip zinc plating furnace and boiler	5	Energy saving was achieved (165,000 Birr/month). An operation manual has been prepared.				
17		Peacock Shoe Factory	Leather	4	Effects were seen. QCC is being deployed.	Increase in production through analysis of bottleneck processes, and shortening of lead time.	5	Through equalization of load burden and shortening of net work times, daily productivity was increased from 600 pairs →800 pairs.	¡	¡	¡	DireDawa Seminar presentation
18		Sabahar PLC	Textile	5	Introduction of QCC. Topics are 5S and quality control	Shortening of lead time (compilation of production plans)	3	A system was created for schematizing manufacturing times and preparing production plans for representative models.		¡		

No.	Batch	Company Name	Type	5S, MUDA		Problem solving			EKI Follow-up	Active KPTs	Acceptance of Media	Other remarks
				Evaluation	Remarks	Topics	Evaluation	Remarks				
19	3rd	Zemilli Paint Factory	Chemical	5	5S targets were achieved, and carrying distances were reduced by 80% as a result of layout change.	SOP system construction: Stabilization of manufacturing process	4	SOP was completed. Control indicators were presented. Implementation is awaited.	¡	¡	¡	Receipt of 2013 Kaizen Award DireDawa Seminar presentation
20		Addis Ababa Tannery	Leather	3	The core members were not very active. 370 m^2 was created as a result of layout change.	・ Shortening of delivery time through improvement of productivity in the drying process ・ Reduction of machine breakdown rate through preventive maintenance	4	・ The target was not achieved for time shortening in the drying process. ・ The target was not achieved for reduction of the machine breakdown rate.				
21		Burayu Packaging & Printing PLC	Chemical	4	Progress was made with initiatives in the model workplace.	・ Labor saving in the carton box manufacturing department ・ General initiatives to improve quality and productivity	4	Productivity was improved by 32% according to the company's estimates.				
22		DH Geda Blanket Factory	Blanket Factory	5	Various improvements were made through company-wide initiatives. (Ceiling ventilation, lighting, trailer manufacture, etc.)	SOP and improvement of productivity	5	Productivity and quality were improved as a result of progress in work review and standardization. (Ex: The rag generation rate was reduced from 20% to 11%).		¡		Mekelle Seminar presentation
23		Educational Materials Production & Distribution Enterprise (EMPDE)	Educational Materials, furniture	5	Dramatic improvements were seen in the model workplace. On seeing results in the model workplace, activities were started in other workplaces.	SOP and improvement of productivity and quality	5	This was the first success story in a state-owned enterprise. There were no drawings at all, but a system was established through SOP. Concerning issues of productivity and quality that arose midway, productivity increased by 16% through the introduction of new jigs. Moreover, the process nonconformity rate dropped from 85% to 10%.		¡		Mekelle Seminar presentation

No.	Batch	Company Name	Type	5S, MUDA		Problem solving			EKI Follow-up	Active KPTs	Acceptance of Media	Other remarks
				Evaluation	Remarks	Topics	Evaluation	Remarks				
24	3rd	Euro Cable PLC	Chemical	5	Vigorous activities were deployed throughout the company. As a result of conducting various reviews, free space was created, carrying distances were shortened, and earnings were made from sale of unnecessary items.	SOP and improvement of productivity and quality	5	Successive improvements were made in line with SOP development. As a result, production capacity was improved from 504 km/day to 720 km/day (43% improvement).		¡		
25		Ferric Belt Metal Processing &Engineering	Metal	5	Activities were deployed company-wide following the kickoff meeting. Earth floors were paved. Dramatic 5S improvement was made to materials stores.	Improvement of quality in the metal processing process	4	Data was acquired and factor analysis was conducted on lines using actual products. In the grinder process, nonconformities were reduced from 33% to 19%, and finished nonconformities were reduced from 55% to 15%. Due to some rebounding, some initiatives need to be continued.				
26		Health Care Food Manufacturers PLC	Agro	5	Not just 5S but also Muda elimination and YK improvement were implemented, leading to elimination of broken bottles during carrying and large-scale shortening of carrying times.	Reduction of losses due to odor and hazardous byproducts in the oil refining process	5	As a result of deploying the QC story, odor was eliminated and oil consumption was reduced to 36 liters per batch.				
27		Inter Emirate Industrial & Service Development PLC	Chemical	3	5S and YK were deployed, however, activities tailed off during busy marketing times. On the final day of ICT, excellent groups were awarded.	Shortening of lead time	4	Lead time was reduced from 319 minutes to 229 minutes.				
28		Minaye Packaging PLC	Chemical	3	The work failed to progress due to lack of work space, and activities tailed off due to job separation by core members.	Reduction in the breakage rate of raw material cardboard	4	Improvement was made but the target wasn't reached.				
29		Modern Zege Leather Products PLC	Leather	4	As a result of advancing 5S, waste elimination and YK, progress was made in the effective utilization of space.	Reduction of nonconformities in the sewing process	3	A plan of measures was compiled using cause and effect diagrams according to the QC story. Procedure and quality standards were decided and training was conducted, however, the results of measures couldn't be confirmed.				

No.	Batch	Company Name	Type	5S, MUDA		Problem solving			EKI Follow-up	Active KPTs	Acceptance of Media	Other remarks
				Evaluation	Remarks	Topics	Evaluation	Remarks				
30	3rd	National Alcohole	Agro	4	Replacing a company that cancelled, this enterprise was late joining and didn't have enough time to conduct activities.	Improvement of boiler efficiency	3	As a result of conducting factor analysis, the cause of low efficiency was found to be steam leaks. Maintenance improvements on softener, etc. were planned, but measures have not been confirmed.				
31		Nova Star Garment	Textile	5	5S and Muda elimination were actively conducted.	Shortening of lead time in the sewing process	4	Improvement based on line balancing was implemented. Effects could not be confirmed in some areas such as obtaining materials and so on.	¡	¡		Bahir Dar Seminar presenter
32		Techale Haile General Metal & Wood Works PLC	Metal	3	Some progress was made.	Shortening of lead time	3	The target was to establish SOP, however, activities were low-key and the company didn't participate in the symposium. The completion certificate hasn't been handed over.				
33		Tikur Abay Shoe S.C	Leather	4	As a result of implementing measures in lasting, vulcanizing, and finishing, space was better utilized.	Improvement of productivity and shortening of delivery time in the shoe production line	5	Setting the target value from tact time, shortening was conducted upon identifying bottlenecks. The company presented the plan of countermeasures and cleared the target.	¡			
34		Yirgalem Addis Textile Factory	Textile	4	5S and Muda elimination were conducted with the dyeing process as a model.	Improvement of productivity and shortening of lead time in the sewing line	5	As a result of shortening bottlenecks based on line balancing, productivity was doubled despite the number of employees remaining the same.				
35	4th	3F(Fin Fine Furniture)	Furniture	5	5S improvements became established in the overall door and cabinet making plant.	Shortening of lead time in manufacture of decorated doors	5	Lead time was reduced to 60% and productivity was improved by 40% as a result of improving process settings and work methods.				
36		Addis Garment	Textile	2	Due to sudden increase in orders, 5S involvement became half-hearted and little progress was made.	Improvement of productivity in the sewing process	2	Involvement with ICT became less active due to the sudden increase in orders. Measures were presented for critical processes, but there was no subsequent progress.				

No.	Batch	Company Name	Type	5S, MUDA		Problem solving			EKI Follow-up	Active KPTs	Acceptance of Media	Other remarks
				Evaluation	Remarks	Topics	Evaluation	Remarks				
37	4th	Anbesa Shoe S.Co	Leather	4	Certain results were obtained in 5S, YK, and Muda elimination, but targets were not reached.	Reduction of nonconformity rate	4	Defects were improved in three types of SAWA shoes. The reduction target was 90% realized.				
38		Balezaf Alcohol and liquor	Agro	5	The results of utilizing shelf space in the targeted spare parts warehouse can become a model for other factories.	Reduction of ineffective washing in the glass bottle washing machine and the label peeling defect rate	4	As the machinery is 40 years old, not all the proposed improvements could be applied, however, nonconformities were greatly reduced through changing process conditions, etc. Continuation and further improvement are anticipated regarding development of new coupling and improvement of label quality.				
39		Beza Industry PLC	Metal	3	A certain degree of success was realized through taking initiatives in 5S and YK, however, there is a big disparity between the EKI evaluation and company's evaluation.	Improvement of machine capacity and productivity through standardization of work	4	Major results were achieved (90% of the target) in terms of increasing productivity, but only 50% of the target was achieved in reduction of nonconformities.				
40		Big.M Apparel &Garment	Textile	4	Narrowing down the targets, progress was made in 5S and Muda elimination.	Increase in productivity through improvement of line balance	4	Line staff generated ideas and the initial target was achieved.				
41		Belaya Industries plc	Agro	3	Achievements from initiatives eventually appeared in the final phase of ICT.	Reduction of the bottle breakage rate in the filling process	4	Problems on the automatic line were finely improved and major reduction was achieved through conducting thorough factor analysis and review of countermeasures.				
42		GG Super Garment/Akaki Garment	Textile	2	A smooth start was made, but activities stagnated after the responsible staff member quit.	Increase in productivity in the police uniform sewing process	2	Due to internal circumstances, activities were suspended midway and could no longer be implemented.		¡		
43		Ghion Industrial Chemicals	Chemical	4	Initiatives focused on 5S and YK, but major improvement was realized in 5S.	Increase in productivity through improvement of the filling and final processes and standardization of work	4	As a result of improving the bottleneck in the work process for the targeted Water Guard products, productivity was improved by 18% (although not the targeted 40%).				

No.	Batch	Company Name	Type	5S, MUDA		Problem solving			EKI Follow-up	Active KPTs	Acceptance of Media	Other remarks
				Evaluation	Remarks	Topics	Evaluation	Remarks				
44	4th	Kalitiy Metal Products Factory	Metal	5	Thanks to the vigorous efforts of the company staff members in charge, numerous 5S improvements were seen in all areas.	Shortening of lead time in manufacture of building structures	5	Drastic layout change has been decided, and implementation is awaited. Following application, major reductions will be achieved in shortening of transfer times.		¡		
45		Kolfe House hold Equipment Factory PLC	Metal	4	Wasteful use of space was greatly improved through implementing 5S.	Increase in productivity through reduction of press molding nonconformities	3	Work standards were prepared and review of die setup time reduction was conducted, however, there are no concrete figures to show how effective that was in terms of reducing the nonconformity rate.				
46		OK Jamaica Shoe	Leather	4	The product warehouse in the model workplace was greatly improved.	Increase in productivity through improvement of line balance	5	Line leaders actively generated ideas and realized improvement of line balance and improvement of layout		¡	¡	Dispatch of JICA teacher, observation by private sector monitor
47		Zack Ethiopia Manufacturing	Chemical	4	Steady efforts in 5S and Muda elimination were observed, albeit over a limited extent.	Reduction of machine breakdowns through autonomous maintenance	4	The start was delayed, but rules were prepared for maintenance.				

Appendix 9: List of Host Enterprises for ICT for TTTs

*Red ink indicates enterprises that did not receive completion certificate based on judgment by EKI.

No.	Batch	Company Name	Type	Evaluation	Implemented KAIZEN	Results	Company evaluation by Trainer	ICT evaluation by company	
								Capability Evaluation	Degree of satisfaction of KAIZEN
1	1st (20)	Addis Loyal Wood and Metal Works	Wood and Metal Work		No data	No data	N/A	N/A	N/A
2		Hailu Abera Wood and Metal Works	Wood and Metal Work	○	No data	No data	N/A	N/A	N/A
3		Weyra Wood and Metal Works	Wood and Metal Work	○	No data	No data	N/A	N/A	N/A
4		Tesfatsion Wood Work	Wood Work		No data	No data	N/A	N/A	N/A
5		Kerero Wood Work	Wood Work		No data	No data	N/A	N/A	N/A
6		Besufikad Wood Work	Wood Work		Increase in productivity, improvement of layout, line balance	Daily productivity increased by 20%, and line balance efficiency increased from 44.6% to 53.5%.	N/A	N/A	N/A
7		Ene Solomon Metal Work	Metal Work	○	Introduction of 2S, improvement of layout	Transfer distance was reduced from 36m to 25.8m. Time spent searching for tools was shortened from 230 seconds to 18 seconds.	N/A	N/A	N/A
8		A3 Wood Work and Furniture	Wood Work	○	Improvement of work environment	Awareness of waiting time was increased, the work environment was improved, and it became easier to move things. The interval between processes was shortened. Time spent searching for objects was shortened.	N/A	N/A	N/A
9		Filagot Wood Work	Wood Work		Improvement of work environment	The enterprise saw little appeal in Kaizen and didn't implement it.	N/A	N/A	N/A
10		Kokola Wood and Metal Works	Wood and Metal Work		5S, increase in productivity	The factory was so cluttered with objects that Kaizen couldn't be implemented.	N/A	N/A	N/A
11		Tesfaye Elala Wood Work	Wood Work		Improvement of layout, introduction of 5S, installation of safety boxes	Expansion of free space, increase in productivity	N/A	N/A	N/A
12		Yared Metal Work	Metal Work		Improvement of layout, increase in productivity, improvement of work safety	The enterprise earned 900 birr through selling scrap. It created 20m^2 of free space. Muda was reduced by 95%; delivery time was shortened by 50%; and 3S awareness was established.	N/A	N/A	N/A
13		Azwa Metal and Construction Work	Metal and Construction		Introduction of 5S, improvement of layout	Because training overlapped with the TVET Kaizen team, no results were produced.	N/A	N/A	N/A
14		Nib Wood and Metal Works	Wood and Metal Work		2S, increase in productivity, installation of safety boxes and fire alarms	Daily productivity increased from 250 units/ day to 400 units/day. The enterprise earned 59,000 Birr through selling scrap (iron).	N/A	N/A	N/A

No.	Batch	Company Name	Type	Evaluation	Implemented KAIZEN	Results	Company evaluation by Trainer	ICT evaluation by company	
								Capability Evaluation	Degree of satisfaction of KAIZEN
15	1st (20)	Windemamachoche Wood and Metal Works	Wood and Metal Work		Layout change, 5S, elimination of Muda	Free space was created. Transportation distances were shortened.	N/A	N/A	N/A
16		Merima Hussen Metal Work	Metal Work		No data	No data	N/A	N/A	N/A
17		Tesfa Leather and Leather Products	Leather		No data	No data	N/A	N/A	N/A
18		Muna Dry Food Processing	Food process		Introduction of 2S, improvement of layout	2S was implemented and work space was expanded. Layout change was only partially implemented.	N/A	N/A	N/A
19		Mulualem Jenberu Wood Work	Wood Work	○	Introduction of 3S, improvement of layout	40% of free space was created. Time spent searching for tools was shortened. Productivity was increased by 49%.	N/A	N/A	N/A
20		Tesmami Engineering	Metal Work		Change of layout in materials stores areas and work areas	The materials store area layout was changed and welding processes were integrated, however, progress in Kaizen stopped midway through the work.	N/A	N/A	N/A
21	2nd (17)	Dagem Hulegeb Construction Material P.L.C	Construction		Prevention of die deformation that causes poor quality, low productivity, and dangerous work ,	Causes of die deformation were analyzed, and drawings of a new die to resolve the problem were prepared. Consent was obtained from the representative, however, since this is a cooperative association, agreement from other members is needed and the work has stopped. If the plan is implemented, it is expected that die repairs will be reduced from every month to once every 3 months.	N/A	N/A	N/A
22		Yohannes Abebe Wood Work	Wood Work		improvement of layout , 2S	In-factory training on 5S was finished and 3S was implemented. Layout was changed according to a proposal for U-shaped lines. Time spent searching for objects was cut to one quarter, free space increased from zero to 56m^2, and traffic lines were reduced by 43%.	N/A	N/A	N/A
23		Kopros Construction	Construction		Reduction of carrying work through improvement of layout, and reduction of die maintenance	A new layout plan was prepared and the owner's consent was obtained, however, the company said that it would discontinue Kaizen in the sixth week, citing delay in payments for sales as the reason.	N/A	N/A	N/A

No.	Batch	Company Name	Type	Evaluation	Implemented KAIZEN	Results	Company evaluation by Trainer	ICT evaluation by company	
								Capability Evaluation	Degree of satisfaction of KAIZEN
24	2nd (17)	Belay Wodaje Metal Work Shop	Metal Work		1. Improvement of the welding process (introduction of jig), and 2S	Following the in-factory training on 5S, materials shelves were installed, and 2S was implemented. The time spent searching for materials and tools was reduced to one-sixth, and work space was expanded fourfold.	N/A	N/A	N/A
25		Menesha Dry Food Processing	Food process	○	Increase in productivity in the foreign materials screening process, drying process, and packaging process	For the foreign materials screening process, it was proposed that underwater screening that utilizes differences in specific gravity be adopted. New machines were proposed, manufactured and introduced in the drying process and packaging process. Drying time is expected to be halved. Drying space was reduced to one-quarter, and sealing time for packaging was reduced by half.	N/A	N/A	N/A
26		Dobby Metal And Wood Work	Wood and Metal Work		① Creation of work areas ② Reduction of work in progress	① 2S, 90% complete ② Small lots are being promoted for reduction of WIP.	N/A	N/A	N/A
27		Yafet Solomon Wood Work	Wood Work		① Reduction of WIP ② Simplification of materials flows	① Through reducing production, inventory of WIP and completed products was reduced to one-fifth. ② Traffic lines were reduced by 40% through changing layout.	N/A	N/A	N/A
28		Wondoson Shibru Wood Work	Wood Work	○	① Reduction of work in progress inventory ② Expansion of work areas through 2S ③ Ordering of material flows	① WIP was halved. ② Scrap storage area was reduced from $12m^2$ to $4m^2$. ③ Transfer intersections were eliminated through changing layout.	N/A	N/A	N/A
29		Nedi Metal And Wood Work	Wood Work		① Expansion of free space in work areas ② Reduction of raw materials inventories ③ Reduction of work in progress inventory	① Free space was expanded from $18m^2$ to $27m^2$. ② Inventory storage space was reduced by 20%. ③ Work in progress inventory was halved.	N/A	N/A	N/A

No.	Batch	Company Name	Type	Evaluation	Implemented KAIZEN	Results	Company evaluation by Trainer	ICT evaluation by company	
								Capability Evaluation	Degree of satisfaction of KAIZEN
30	2nd (17)	Azeb Baltena CSI	Food process		Rationalization of carrying of heavy tank objects (application of Muda elimination in carrying)	Trolleys were purchased based on agreement by the joint owners. Concerning flat corridors, remodeling is not allowed due to a promise with the government. Instead, rubber tires are used. Also, a slope was added for trolleys when unloading from tanks. Yellow lines were adopted around the trolley bay, and utilization of trolleys became more certain.	N/A	N/A	N/A
31		Alemu General Wood Work Co-operation Association	Wood Work		Fixing of materials storage areas and tool storage areas (application of 5S)	Based on the proposed new layout, raw materials storage areas (shelves), laminated drying tables, and scrap storage areas were placed, and 2S was implemented. Also, tools stores were organized and Kaizen boards were installed.	N/A	N/A	N/A
32		Wub Wood And Metal Work Enterprise	Wood and Metal Work		Reduction of nonconformities in the laminating and painting processes (application of Kaizen based on QC)	Concerning laminating nonconformities, experiments were tried upon changing the distance between clamps, degree of clamp tightening, and drying time. On keeping the distance between clamps and degree of clamp tightening the same and extending the drying time from 1 day to 1.5 days, nonconformities dropped from 10% to 0%. It is also likely that paint nonconformities will be improved through adopting spray coating.	N/A	N/A	N/A
33		Bekele Zike Metal, Wood And Aluminum	Metal Work		Implementation of autonomous preventive maintenance on machines (application of autonomous maintenance)	Since it takes at least six months to acquire statistical data on machine breakdowns, guidance was given on autonomous maintenance. The president and trainees jointly prepared a check sheet showing the check points, selected and cleaned actual pilot machines, and performed lubrication and bolt tightening. In doing so, they established autonomous maintenance.	N/A	N/A	N/A

No.	Batch	Company Name	Type	Evaluation	Implemented KAIZEN	Results	Company evaluation by Trainer	ICT evaluation by company	
								Capability Evaluation	Degree of satisfaction of KAIZEN
34	2nd (17)	Nina Textiles And Textiles Products Group Enterprise	Textile	○	Increase in productivity	A line balance Kaizen plan and a method for gauging production progress were proposed. Moreover, introduction of QCC was proposed with a view to improving quality control. The nonconformity rate was reduced from 8% to 3%. Productivity was improved from 450 to 760 products per day. The traffic line to the warehouse was reduced from 7 m to 3 m. Following ICT, EKI plans to continue guidance.	N/A	N/A	N/A
35		OAK Furniture Enterprise	Wood Work		3S, QC	Almost all the 3S work had been completed. Since measurement error was a major cause of nonconformities, group leaders lectured the responsible staff on measurement methods. Concerning color disparities, measures were omitted because of the difficulty of finding a solution. Concerning dust countermeasures, Kaizen is awaited on the company side.	N/A	N/A	N/A
36		Tsenat Sweater Work Group Enterprise	Textile		3S	The start of Kaizen was delayed due to circumstances on the company side. Shelves for holding materials and finished products were installed and organized. Shelves for storing yarn were ordered. Installing shelves makes it easier to grasp materials and products.	N/A	N/A	N/A
37		Addis Hiwot Construction	Construction		5S, reduction of nonconformities, layout Kaizen	Housekeeping was implemented. Time spent on producing 1 block was reduced from 35~37 seconds to 28 seconds. As a result, it appears that equipment productivity will increase.	N/A	N/A	N/A
38	3rd (15)	Hebere Wood and Metal Works Association	Wood and Metal Work		Introduction of 3S, and improvement of layout	Work space was expanded from 60% to 89%. Layout was improved in line with the work flow, and ease of work was improved.	3	2	4
39		Google Metal Works	Metal Work		Introduction of 3S, improvement of layout, improvement of work safety, introduction of jigs	Due to introduction of 3S and improvement of layout, possible work space was increased from 67% to 76%. Safety was improved through introducing distribution equipment. Bending jig drawings were devised and proposed for introduction.	4	5	5

No.	Batch	Company Name	Type	Evaluation	Implemented KAIZEN	Results	Company evaluation by Trainer	ICT evaluation by company	
								Capability Evaluation	Degree of satisfaction of KAIZEN
40	3rd (15)	Daniel Hailemariam Wood and Metal Works	Wood and Metal Work	○	Introduction of 3S, improvement of layout, improvement of laminating process, improvement of plant management	Through implementing improvement of layout and 3S, unnecessary repetitive work was reduced and productivity increased by 30%. Also, work lines were tidied up. Entrepreneurial thinking was nurtured.	5	4	5
41		Sultan Seid Wood Work P.L.C.	Wood and Metal Work		Introduction of 3S, improvement of layout, nurturing of entrepreneurial thinking	Work space was expanded from 67% to 81%. Processes were rearranged in line with the flow of work. Electrical wiring was improved and safety was enhanced.	2	5	4
42		London Shoe Maker	Leather		Introduction of 3S, increase in productivity	Productivity was increased by 94%.	3	3	4
43		Big Five Wood and Metal Work Association	Wood and Metal Work		Introduction of 3S, introduction of tool boards, improvement of layout	As a result of implementing 3S in the showroom as well as work area, more customers came in and sales increased. Layout was improved in line with the work flow. Time spent searching for tools was shortened from 2 minutes to 10 seconds. Tools and materials that had been lost were found. Through introducing Kaizen boards, ongoing Kaizen activities were started in the enterprise.	5	5	5
44		Luab Wood and Metal Work Association	Wood and Metal Work		Introduction of 3S, improvement of layout	Free space was increased from 2.8m^2 to 15.4m^2. Transfer distances between processes of work in progress were reduced by 32%.	4	5	5
45		BT Metal Work Cooperative Society With Limited Liability	Wood Work		Introduction of 3S, improvement of product design	Flow of work was made smoother through implementing 3S and improving layout. Time spent searching for tools was greatly shortened from 2 minutes to 7 seconds. Material costs were reduced through changing the materials and design of elbow rests and foot rests on products (barber's chairs).	4	5	5
46		Getachew Wood and Metal Work Enterprise	Wood and Metal Work	○	Introduction of 3S, improvement of layout	Layout was improved in line with the work flow. Line free space was increased. Scrap worth 625 Birr was collected, and it was possible to sell scrap worth 450 Birr. A Kaizen team was formed and started to hold weekly meetings lasting from 30 minutes to 1 hour.	5	5	5

No.	Batch	Company Name	Type	Evaluation	Implemented KAIZEN	Results	Company evaluation by Trainer	ICT evaluation by company	
								Capability Evaluation	Degree of satisfaction of KAIZEN
47	3rd (15)	Besufekad Woreda 2 Wood and Metal Works	Wood and Metal Work		Introduction of 2S, introduction of tool boards, improvement of layout	Layout was improved in line with the work flow. Line free space was increased.	4	5	5
48		Addis W/Rufael Wood Works Association	Wood Work	○	Introduction of 3S, improvement of layout, improvement of skills , shortening of lead time	Time spent searching for objects was reduced from 7 minutes to 1 minute; work space was expanded from 15.8 m^2 to 14.7 m^2; and carrying distance inside the plant was shortened from 20.5 m to 11.8 m.	3	5	5
49		Mach Engineering	Metal Work	○	Reduction of waiting Muda, Introduction of 3S, improvement of electricity safety	Through introducing 3S, waiting Muda was reduced to an extent, and the work environment was improved. Work safety was improved.	2	3	4
50		DFD Wood and Metal Works Association	Wood Work	○	Introduction of 3S, improvement of layout, improvement of power distribution network	Time spent searching for tools, etc. was greatly reduced from 25 minutes to 15 seconds, and work space was expanded from 16m^2 to 42m^2. Work accidents dropped from 5 cases per month to zero.	4	4	5
51		Tsion Industrial Engineering and Metal Works Enterprise	Metal Work		3S, improvement of layout, improvement of quality	Time spent searching for objects was reduced from 30 minutes to 5 minutes. Work space was expanded from 29m^2 to 50 m^2.	4	4	5
52		Getahun Geberhiwot Metal Work P.L.C.	Metal Work	○	Introduction of 3S, improvement of layout, shortening of lead time	3S was implemented and unnecessary items were tidied up. Also, the line environment was improved and employees acquired Kaizen thinking and techniques.	2	4	4
53	4th (12)	United Wood Work and Metal Cooperative	Wood and Metal Work		Introduction of 3S, improvement of layout	An additional 81m^2 of work space was created, and transfer distance was reduced by 53.6% as a result of improvement of layout. Through these activities, lost materials and nails were found and costs were reduced.	5	5	5
54		Abakostr House and Office Furniture Producing	Wood and Metal Work		Introduction of 3S, improvement of layout, elimination of wasteful movements in the assembly process, improvement of quality	Through introduction of 3S and improvement of layout, possible work space was increased and a lot of scrap and useable materials were found. These items were worth 11,000 Birr. Machine cleaning and maintenance of broken down machines were implemented.	5	5	5

No.	Batch	Company Name	Type	Evaluation	Implemented KAIZEN	Results	Company evaluation by Trainer	ICT evaluation by company	
								Capability Evaluation	Degree of satisfaction of KAIZEN
55	4th (12)	Aklilu Ejigu Wood and Metal	Wood and Metal Work		Introduction of 3S, improvement of layout, improvement of line balance, implementation of safety management	Due to busyness, cooperation for Kaizen was not forthcoming; moreover, because it took time to explain to the owner (who didn't show himself), the Kaizen did not proceed as anticipated.	3	4	5
56		Marsa General Wood and Metal Works	Wood and Metal Work		Introduction of 3S, improvement of line balance, improvement of layout	Through introduction of 3S, possible work space was increased by 32%, and through review of line balance, work productivity was increased by 33%.	5	5	5
57		Bet-El General Wood and Metal Works	Wood and Metal Work		Introduction of 3S, improvement of layout, reduction of nonconformities	Work space increased by 88.7% and transfer distance was shortened by 9.5%. Concerning quality, line data was collected and the contents analyzed, however, work did not progress to countermeasures and their results.	3	5	5
58		Gashaw Metal Works Enterprise	Wood and Metal Work		Introduction of 3S, improvement of layout	Work space increased from 60% to 89%. Layout was improved in line with the work flow, and the ease of work was improved.	2	3	5
59		Yabraham Terara Wood and Metal Works	Wood and Metal Work	○	Introduction of 3S, improvement of layout, improvement of line balance	As a result of 3S, time spent searching for objects was reduced by 80%. Moreover, through improvement of layout, possible work space increased by 30%, and transfer distances were shortened by 25%. Through improvement of line balance, work efficiency was increased by 10%.	3	5	5
60		Zemen Furniture P.L.C.	Wood Work	○	Introduction of 5S, improvement of layout, introduction of tool boards	Layout was improved in line with the work flow, and free space on lines was increased.	3	4	4
61		NGB Wood and Metal Work Enterprise	Wood and Metal Work		Introduction of 3S, improvement of layout, cost control	Due to busyness, the desired progress was not made in introduction of 3S and improvement of layout. The plant is overflowing with work in progress, making it impossible to secure storage space. On estimating the sales prices of cupboards, they were found to be within the range envisaged by the president.	N/A	N/A	N/A

No.	Batch	Company Name	Type	Evaluation	Implemented KAIZEN	Results	Company evaluation by Trainer	ICT evaluation by company	
								Capability Evaluation	Degree of satisfaction of KAIZEN
62	4th (12)	Lankiana Wood and Metal Works	Wood and Metal Work		Introduction of 3S, improvement of layout, quality improvement	Because training overlapped with the TVET Kaizen team, no results were produced.	N/A	N/A	N/A
63		Detemi furniture	Wood Work		Elimination of work imbalance, processing balancing, improvement of layout, provision of parts designs	Work fluctuations were reduced 15%, leading to increase in productivity. Work space was increased by 40% or more and transportation distances were reduced by 25%. The nonconformity rate was reduced by 15%.	N/A	N/A	N/A
64		Astena Wood and Metal Work	Wood and Metal Work		Introduction of 3S, improvement of layout, elimination of Muda	Time spent searching for objects was reduced by 30% as a result of layout change. Also, an additional 14.5m^2 of space was created. Transportation distances were shortened from 5 m to 2 m.	N/A	N/A	N/A
65	5th (24)	Osman Mekonnen Office and Home Furniture (OM Furniture)	Wood Work		Introduction of 2S, improvement of layout, improvement of work safety	Work space was increased by 60%, time spent on searching was reduced by 96%, and transfer distances were reduced by 77%.	5	5	5
66		Abebe Gurmesa Metal and Wood Work Enterprise	Wood and Metal Work	○	Introduction of 2S, improvement of layout, increase in productivity	Free space was increased by 50% and productivity was improved by 9%.	5	5	5
67		Loyal King Candy Factory	Candy Factory	○	Introduction of 3S, improvement of layout, improvement of quality	Space was increased by 76%, and transfer distance was reduced by 27%. Reprocessing nonconformities were reduced from 60% to 40%.	5	5	5
68		Dibab Construction	Construction		Introduction of 3S, improvement of layout, reduction of nonconformities through introduction of QC	Through implementing 3S and improvement of layout, free space was increased by 5%. Also, nonconformities were reduced by 15%.	5	4	5
69		Sea Aluminium Work	Metal Work	○	Improvement of layout, Introduction of 3S	Space was increased by 24%, and transfer distance was reduced by 54%. Productivity was increased by 35%.	5	5	5
70		Salem's Design	Artisan	○	Improvement of delivery delays, increase in productivity	Preparation of work standard omitting wasteful movement from hand-woven basket work, and implementation of training based on it. Trial implementation resulted in 26% increase in productivity (however, because the trial operation targeted few operators and the trial time was short, care is needed when judging the results).	5	5	5

No.	Batch	Company Name	Type	Evaluation	Implemented KAIZEN	Results	Company evaluation by Trainer	ICT evaluation by company	
								Capability Evaluation	Degree of satisfaction of KAIZEN
71	5th (24)	Abraham and Sinedu Household and Office Furniture Private Enterprise	Wood Work		Concerning production of beehives: improvement of work layout and traffic lines	During ICT, production of beehives was finished and the company pulled out of a separate plant used for their assembly. As a result, the target of Kaizen was switched to furniture making in the parent plant, where 3S was introduced. As a result, a lot of scrap was removed, layout was partially changed and work space increased by 12.4 m^2. Moreover, the 3S mind became established in the operators.	5	2	5
72		Friendship Agro Industry PLC (Cage, Feed)	Agro	○	Reduction of transfer work through improvement of layout	The mixing process was moved from the plant rear to around the entrance, and the storage area for materials used in large quantities was changed to near the mixing process. As a result, carrying work, which had accounted for a large proportion of work, was reduced by 55%, productivity was increased by 39%, and 43 m^2 of work space was created. Additionally, materials worth 75,000 Birr were found.	5	5	5
73		Friendship Agro Industry PLC (Cage, Feed)	Metal	○	Reduction of transfer work through improvement of layout	Partitions between processes were removed, and improvement of layout to U-shape was implemented. 27m^2 of free space was created, and traffic lines were reduced by 19%.	5	5	5
74		Aklilu Habtamu Ena Guadegnamamochu Metal and Wood Work PLC	Wood Work		Introduction of 2S, improvement of layout	Whereas the entire plant had been littered with scrap, following introduction of 2S, work space was greatly increased; however, the planned improvement of layout was not implemented after that.	5	2	5
75		Getachew Derbe House and Office Hold Materials	Wood Work		Introduction of 3S, improvement of layout	Work area was expanded from 98 m^2 to 133 m^2; time spent searching for objects was shortened from 2 minutes to 10 seconds; and lead time was shortened from 10 days to 9 days. Also, the nonconformity rate was halved.	N/A	N/A	N/A

No.	Batch	Company Name	Type	Evaluation	Implemented KAIZEN	Results	Company evaluation by Trainer	ICT evaluation by company	
								Capability Evaluation	Degree of satisfaction of KAIZEN
76	5th (24)	Behailu and Tsega Partnership	Wood and Metal Work		Introduction of 2S	Training on 5S was implemented for operators in the plant, however, no progress was made in the actual 2S.	2	N/A	N/A
77		O Leather PLC	Leather	○	Introduction of 3S, improvement of layout	Free space was increased by 110 m^2. Production was increased from 30 bags to 40 bags per day.	4	3	5
78		Elfwork PLC	Metal Work	○	Introduction of 3S, improvement of layout	Work space increased from 5 m^2 to 32 m^2. Time spent searching for objected was shortened, and scrap worth 10,000 Birr was gathered.	4	N/A	N/A
79		Korean War Veterans and Veterans Family Weaving and Carpets Work Cooperative Society with Ltd. Liability	Textile		Introduction of 3S, improvement of layout	Work space was increased from 30m^2 to 51 m^2; time spent searching for objects was shortened from 3 minutes to 1 minute; and transfer distance was shortened from 34 m to 25 m.	5	N/A	N/A
80		Bahta Home and Office Furniture	Wood Work	○	Introduction of 3S, improvement of layout, elimination of Muda	Work space of 5.5 m^2 was created, and transfer distance was shortened from 82 m to 54 m.	4	N/A	N/A
81		Nasir Modern Home and Office Furniture Enterprise	Wood Work		Introduction of 5S, improvement of layout, improvement of quality	Work space was increased from 21 m^2 to 39 m^2, and transfer distance was shortened from 3 m to 2 m, however, little progress was made in improvement of quality.	3	N/A	N/A
82		HMM Wood and Metal Work PLC	Wood and Metal Work		Introduction of 3S, improvement of layout	Work space of 15 m^2 was created. Transfer distance was shortened by 43 m, and product breakages were reduced to 4.2%.	4	N/A	N/A
83		Winner Bole 04/06/07 General Construction Cooperative Society With Limited Liability	Construction		Introduction of 3S, improvement of layout, quality control	Work space was increased from 5 m^2 to 21 m^2; time spent searching for objects was shortened from 5 minutes to 30 seconds; and transfer distance was shortened from 4 m to 1 m.	3	N/A	N/A
84		Adane Genete Metal Work	Metal Work	○	Introduction of 3S, improvement of layout, improvement of bookkeeping	Time spent searching for objects was shortened from 5 minutes to 30 seconds, and free space of 15 m^2 was created. Transfer distance was shortened from 24 m to 4 m.	5	4	4
85		Mulugeta Tsegaye Household and Office	Wood and Metal Work		Introduction of 3S, improvement of layout	Time spent searching for objects was shortened from 2 minutes to 30 seconds, and work space was expanded from 18m^2 to 28 m^2. Transfer distance was shortened from 38 m to 32 m.	4	2	5
86		Merhawi Haile Wood and Metal Work Enterprise	Wood and Metal Work		Introduction of 5S, formation of a Kaizen team	Materials racks were introduced as part of 5S, however, the plant was subsequently closed.	1	N/A	N/A

No.	Batch	Company Name	Type	Evaluation	Implemented KAIZEN	Results	Company evaluation by Trainer	ICT evaluation by company	
								Capability Evaluation	Degree of satisfaction of KAIZEN
87	5th (24)	Zeritu Birhanu Wood Work Enterprise	Wood Work		Introduction of 3S, improvement of layout, improvement of bookkeeping	Time spent searching for objects was shortened from 5 minutes on average to 2 minutes, and 3,500 Birr in cash was earned disposing of unwanted items. Improvement of bookkeeping made little progress.	4	2	5
88		Woubishet, Tamiru and Friends Metal Work Partnership	Wood and Metal Work	○	Improvement of electric equipment, introduction of 3S, improvement of layout, improvement of welding technology, improvement of accounts bookkeeping	Machine stoppages due to electric troubles were reduced from 3 times a day to zero; time spent searching for objects was shortened from 20 minutes on average to 2 minutes; and work space was expanded by 153%. Transfer distance was reduced by 63%, and welding nonconformities were halved. There was no time to improve bookkeeping.	5	5	5
89	6th (15)	Quality Engineering Business P.L.C	Wood and Metal Work		Introduction of 3S, improvement of layout, reduction of Muda	Production planning and KPY were introduced, and teamwork was improved. Time spent searching for objects was shortened from 2 minutes to 30 seconds. Kaizen knowledge and safety awareness were enhanced.	4	3	N/A
90		Mubiano Wood Craft	Wood Work		Introduction of 3S, improvement of layout	200 Birr was earned in disposing of scrap. Free space of 20% was created in work areas.	3	3	N/A
91		Addis Metal and Wood Work	Wood and Metal Work		*Dropped out midway		N/A	N/A	N/A
92		Mohammed Hayderb Wood and Metal Work	Wood and Metal Work		Introduction of 3S, improvement of layout	Safe and appropriate work lines were formed. Motivation of employees was enhanced. Kaizen knowledge was enhanced. Transfer distance was reduced from 38 m to 25 m.	2	2	N/A
93		Wondimamachoche Marbel and Construction Materials P.L.C.	Construction		Development of new carrying method, introduction of 3S	Kaizen knowledge was enhanced. Transfer time was reduced from 5 minutes to 2 minutes. Transfer distance was reduced from 27 m to 5 m. Motivation on the work floor was enhanced.	3	4	N/A
94		G-Seven General Construction & Aluminium Work PLC	Construction		Improvement of layout, improvement of safety on work lines	This company only implemented tidying, but Kaizen activities after that were suspended.	2	N/A	N/A
95		Asrat and Hilawi Engineering Partnership	Metal Work	○	Housekeeping of work lines, improvement of layout, improvement of production method, introduction of production scheduling	Free space of 30 m^2 was created. The high nonconformity rate was reduced. The employees produced lots of creative Kaizen ideas. 2 KPTs were formed.	4	5	N/A

No.	Batch	Company Name	Type	Evaluation	Implemented KAIZEN	Results	Company evaluation by Trainer	ICT evaluation by company	
								Capability Evaluation	Degree of satisfaction of KAIZEN
96	6th (15)	Rhobot Techno Trading	Wood and Metal Work		Introduction of 3S, improvement of layout	The work lines became clean and attractive. Kaizen knowledge was enhanced.	3	N/A	N/A
97		Shir - Shir Ethiopia	Leather	○	Housekeeping of work lines, introduction of QCC	A KPT was formed and good teamwork was observed.	3	3	5
98		Fikadu and Selamawit Enterprise	Wood Work		*Dropped out midway		N/A	N/A	N/A
99		Abdi Boru House Hold & Office Furniture PLC	Wood Work		Introduction of 3S, improvement of layout	Through implementation of 2S, free space was increased by 30%. Transfer distance was reduced by 30%. Lead time was reduced by 10%.	3	1	4
100		Mamush Pool PLC	Wood and Metal Work	○	Introduction of 3S, shortening of lead time, introduction of KPT	Clean and tidy work lines were formed. Jetton lead time was reduced from 1 minute to 10 seconds. Two2 active KPTs were formed.	4	4	5
101		Hairedin Herato Wood & Metal Work Enterprise	Wood and Metal Work		Implementation of 3S, safe power distribution equipment	Unnecessary items were removed from the work lines. Through sorting raw materials according to size, carrying in and out became easier. Electric circuits on work lines were replaced with safe products.	4	4	5
102		BAS PLC	Wood Work		Implementation of 3S, improvement of layout, improvement of quality in the lamination process	10 m^2 of free space was created. Transfer distance was reduced by 25 m. Awareness regarding the quality nonconformity rate was enhanced.	3	5	5
103		Minilik Engineering PLC	Metal Work		Introduction of 3S, improvement of layout, line balancing	A tidy work line was realized. Through improvement of layout, carrying distance was reduced from 11 m to 4 m.	5	3	5
104	7th (12)	Atkilit Getahun Textile Apparel	Tailor		Introduction of 3S, improvement of layout	Cost was reduced by 60%, the defect rate was reduced, and the time for making main products was reduced by 37%. More communication was seen between employees and safety management was improved in the work environment.	3	5	5
105		Mikias Abel and Friends Leather and Leather Pro.	Leather	○	3S, improvement of layout, shortening of lead time	As a result of 3S, free space was increased by 10%. Time spent searching for objects was shortened by 30%. Through changing layout, traffic lines were shortened.	2	3	5

No.	Batch	Company Name	Type	Evaluation	Implemented KAIZEN	Results	Company evaluation by Trainer	ICT evaluation by company	
								Capability Evaluation	Degree of satisfaction of KAIZEN
106	7th (12)	Yishak Zelalem Sara & Friends Handcrafts	Leather		3S, improvement of layout, shortening of lead time	Lead time was improved from 6 days to 3 days, and productivity was increased by 20%. Time spent searching for objects was shortened from 1 minute to 15 seconds. Teamwork was improved and the safety awareness of employees was enhanced.	3	5	5
107		Dawit Abiy & His Friends	Wood and Metal Work		3S, improvement of layout, shortening of lead time	As a result of 3S, free space was increased by 87%. Time spent searching for objects was shortened from 15 seconds to 5 seconds. Through changing layout, traffic lines were shortened. Lead time was shortened from 50 minutes to 30 minutes. The safety awareness of employees was enhanced.	2	5	5
108		Mesker Metal and Wood Work PLC.	Wood and Metal Work		3S, improvement of layout, shortening of lead time	As a result of 3S, 6 m^2 of free space was created. Time spent searching for objects was shortened by 40 seconds. Through changing layout, traffic lines were shortened. Lead time was shortened from 6 days to 4 days. The safety awareness of employees was enhanced.	2	3	4
109		Nishan, Arinet & Her Friends	Food process	○	Introduction of 3S, improvement of layout	As a result of 3S, 83 m^2 of free space was created. Productivity was increased by 40%. Time spent searching for tools was shortened from 10 minutes to 30 seconds. Teamwork was improved and the safety awareness of employees was enhanced.	3	3	4
110		Hammer Dry Food Preparation Association	Injera Baking		3S, improvement of layout, reduction of Muda	As a result of 3S, 8.5 m^2 of free space was created. Through changing layout, traffic lines were shortened from 6 m to 4 m. Water leaks were fixed.	3	N/A	N/A
111		Mesegana, Eden and Tsegay Shoe Maker Partnership	Leather		3S, improvement of layout	As a result of 3S, time spent searching for objects was shortened by 40%. Through changing layout, free space was increased and traffic lines were reduced by 50%.	2	5	4
112		Demeke Regassa Wood and Metal Work PLC	Wood and Metal Work	○	3S, improvement of layout	As a result of 3S, free space was increased by 30%. Time spent searching for objects was shortened. Through changing layout, traffic lines were shortened and a pleasant work environment was secured. The defect rate was reduced.	3	4	5

No.	Batch	Company Name	Type	Evaluation	Implemented KAIZEN	Results	Company evaluation by Trainer	ICT evaluation by company	
								Capability Evaluation	Degree of satisfaction of KAIZEN
113	7th (12)	Self Support Disabled Group	Leather		5S, improvement of layout	As a result of 3S, 20 m^2 of free space was created. Through changing layout, traffic lines were shortened by 8 m. Defects, personnel expenses, and parts costs were reduced. As a result of introducing Kaizen, teamwork improved and the safety management awareness of employees was enhanced.	4	4	4
114		Hareg, Yehualashet and Their Friends Wood Work Partnership	Wood and Metal Work	○	3S, improvement of layout, line balance	As a result of 3S, 48 m^2 of free space was created. Through changing layout, traffic lines were shortened. 1,440 Birr was earned through selling unnecessary items.	5	N/A	N/A
115		Habte Garment and Printing	Textile	○	5S, improvement of layout, line balance, safety management	As a result of 5S, time spent searching for tools was shortened by 20%. The process flow was improved. Through changing layout, free space was increased. Safety management awareness was enhanced and a safe work environment was created. Time in sewing sub-processes was improved through changing the line balance.	5	5	5
116	8th (14)	Fikadu and Selamawit Wood and Metal Work Partnership	Wood	○	5S, improvement of layout	As a result of 5S, free space was increased by 20%. Time spent searching for objects was shortened by 15%.	4	4	5
117		Hailegebriel Fereda and Friends Wood and Metal Work Partners	Wood	○	5S, improvement of layout, KPT	Teamwork and motivation were enhanced, and time spent searching for objects was shortened. Safety management awareness was enhanced	4	4	N/A
118		Sebrom General Trading PLC	Garment	○	3S, improvement of layout	Time spent searching for tools was shortened from 180 seconds to 80 seconds. Free space was increased from 7.5 m^2 to 21 m^2. Productivity was increased from 180 jackets per day to 240 jackets per day (the anticipated target is 400 per day).	4	3	4
119		Meaza, Asnake and Their Friends PLC	Ditergent	○	3S, improvement of layout	Time spent searching for tools was shortened from 2 minutes to 30 seconds. Free space was increased from 28 m^2 to 48 m^2. Productivity was increased by 17%.	4	3	5

No.	Batch	Company Name	Type	Evaluation	Implemented KAIZEN	Results	Company evaluation by Trainer	ICT evaluation by company	
								Capability Evaluation	Degree of satisfaction of KAIZEN
120	8th (14)	Kedus, Bethelihem Private Enterprise	Wood and Metal Work	○	5S, improvement of layout	As a result of 5S, free space was increased by 5%. Through changing layout, traffic lines were shortened from 9.7 m to 6.3 m.	4	5	4
121		Azalech Degefu Metal Work Enterprise	Metal		5S, improvement of layout	Free space was increased 20% to 48 m^2. Time spent searching for tools was shortened by 30%. Through changing layout, traffic lines were shortened from 46 m to 39 m, and from 47 m to 42 m respectively.	4	4	5
122		Getnet Assefa and Their Friends Wood and Metal Work Partnership	Metal	○	5S, improvement of layout, QCC	Safety management awareness was improved and the work environment was made for pleasant due to layout change.	5		5
123		D.A.G Construction P.L.C	Wood and Metal Work		3S, improvement of layout	Time spent searching for tools was shortened from 2 minutes to 30 seconds. Free space was increased from 33m^2 to 60m^2.	3	3	5
124		Berhanu Tsehay Textile and Garment PLC	Garment	○	3S, improvement of layout, line balance	Teamwork and safety awareness were improved; productivity was increased (1000 sheets/480 minutes → 1300 sheets/480 minutes); and earnings from sales were passed on to employees in the shape of a bonus.	4	5	4
125		Biniam Leather Goods Industry	Leather	○	2S, KPT, Kaizen board, improvement of layout	Productivity was increased through changing the shop layout and cutting costs.	2	5	5
126		Ephrem and his Friends Wood and Metal Cooperative Enterprise	Wood and Metal Work		3S, improvement of layout	Time spent searching for tools was shortened from 2.5 minutes to 30 seconds. Free space was increased from 17 m^2 to 23 m^2. Through changing layout, traffic lines were shortened from 14 m to 10 m.	3	3	5
127		FM Wood Work PLC	Wood		5S, improvement of layout	Time spent searching for tools was shortened from 2 minutes to 30 seconds. Through changing layout, traffic lines were shortened from 24 m to 15.6 m. Teamwork and safety awareness were improved.	3	5	4
128		Walnet Wood and Metal Work Partnership	Wood		KPT, 7QCtools	Teamwork and motivation were improved.	3	N/A	N/A
129		Lemlem Candy Manufacturing	Candy Factory		3S, improvement of layout	Productivity was increased (2000/day →2500/day). Time spent searching for tools was shortened from 300 seconds to 180 seconds. Free space was increased by 5 m^2. Through changing layout, traffic lines were shortened from 19 m to 5 m.	4	3	5

Appendix 10: Questionnaire for the Impact Survey

Impact Survey

Project on Capacity Building for Dissemination

of Quality and Productivity Improvement (KAIZEN)

QUESTIONNAIRE for LME Baseline

<Objective of the Survey>

This survey is a joint research between the Ethiopian Development Research Institute (EDRI) and the Project on Capacity Building for Dissemination of Quality and Productivity Improvement (KAIZEN) conducted by Japan International Cooperation Agency (JICA) and Ethiopian KAIZEN Institute (EKI). This survey forms part of the research study for enhancing enterprise productivity and quality of products in the Ethiopian manufacturing sector through various capacity building mechanisms including classroom and in-company KAIZEN training for selected enterprises. We promise that any information collected through the interviews will be used exclusively for the research purpose.

<Enumerator>

Before proceeding to the survey questions, please make sure that you have explained the objective of the survey clearly to the respondent. The respondent should also be convinced that the information obtained is private, and EDRI would not reveal the respondent's name, enterprise name, or any other identifying information to a third party.

Note: a) Use Ethiopian Calendar (EC) year for all related questions in this questionnaire.
b) Check (✓) on the appropriate number for the multiple-choice questions.
c) Use the following codes: - 77 for "Not applicable"
- 88 for "Do not know"
- 99 for "Refusal"

	Name	Completed date	Comments	Signature
Enumerator				
Supervisor				
Data verifier				

1. Date of Survey

1.1	Day		1.2	Month		1.3	Year	

2. Respondent Information

To Enumerator: Please understand that the respondent should be the general manager or equivalent at the top decision maker of the enterprise. If you cannot interview the general manager, please get an appointment to speak with him at some later date.

2.1	Name	
2.2	Position	1. Owner and GM (or equivalent) 2. GM (or equivalent) but not owner 3. Vice manager 4. Production manager 5. Spouse of owner 6. Child of owner 7. Others, specify _____
2.3	Tel	
2.4	Age	
2.5	Sex (1=Male 2=Female)	

2.6	Highest level of education	1. No formal schooling 2. Primary school 3. High school 4. Vocational school 5. University/college
2.7	Years of schooling	
2.8	Do you have prior experience working in the manufacturing sector	1. Yes 2. No
	2.8.1. If yes, for how many years?	
	2.8.2. If yes to 2.8, in which of the following sectors?	1. Agro-processing 2. Chemical 3. Leather & footwear 4. Metal 5. Textile & Garment 6. Others
2.11.	Do you have prior trading experience?	1. Yes, as a retailer 2. Yes, as a wholesaler 3. Yes, salesperson, sales or purchasing manager 4. Yes others 5. No
	2.11.1. If yes, for how many years?	
2.12	Do you have prior management experience?	1. Yes, top-level 2. Yes, middle-level 3. Yes, low-level 4. No
	2.12.1. If yes, for how many years?	
2.13	Years of management experience (at the current enterprise)	

3. Enterprise General Information

3.1	Enterprise name			
3.2	ID code			
3.3	Enterprise tel number	Fixed line:	Mobile:	
3.4	E-mail			
3.5.	Website			
3.6	Sub-city			
3.7	Woreda			
3.8	Local name			
3.9	House no.			
3.10	Description of how to get to the enterprise			
3.11	Year of establishment			
3.12	Sub-sector	1. Agro-processing 2. Chemical 3. Leather & footwear 4. Metal 5. Textile & Garment 6. Woodwork 7. Others, specify _____		
3.13	Main product			
3.14	Second main product			
3.15	Third main product			
3.16	Type of sales channel (%)			
	3.16.1. Direct sales to users using own retail store		3.16.3. wholesalers	
	3.16.2. Other retail stores		3.16.4. Direct exporting	

3.17	Number of plants			
3.18	Enterprise current ownership	1. Domestic private 2. State owned 3. Foreign owned 4. Joint venture 5. Cooperative 6. Others, specify _____		
3.19	Is the enterprise registered for VAT?	1=Yes 2=No	3.20. Does the enterprise have TIN?	1=Yes 2=No

4. Business Performance: Employment (as of the time of data collection)

To Enumerator: Number of persons engaged should include the General Manager and other managers as well as supervisors, foremen and quality control personnel.

4.1	Number of persons engaged (permanent and temporary)	
	How many of these are	***Enumerator: Be sure that the sum of the first three and the last two each should be equal to the total number of persons engaged***
	4.1.1. Paid workers	
	4.1.2. Unpaid family workers	
	4.1.3. Apprentices and likes	
	4.1.4. Male	
	4.1.5. Female	
4.2	Total number of production workers	
	How many of these are	***Enumerator: Be sure that the sum of 4.2.1 and 4.2.2 should be equal to 4.2***
	4.2.1. Permanent	
	4.2.2. Temporary	
4.3	Total number of supervisors, foremen and quality control personnel	
4.4.	Total number of managers including low level managers	
4.5	Number of marketing workers (permanent and temporary)	
4.6	Main payment arrangement of production workers	1. Piece rate 2. Daily basis 3. Weekly basis 4. Fortnight basis 5. Monthly basis 6. Others, specify _____

5. Business Performance: Sales and Cost

To Enumerator: When filling in this section, please make sure that you do not omit or add more zeros than the respondents answer. By referring to the financial record of the enterprise, please also check whether the respondent under or overstated the figures. Please also note that *all figures should be in thousands.*

		July 2010-June 2011 (Hamele 2002-Sene2003)	July 2011-March 2012 (Hamele 2003-Megabit 2004)
		(a)	**(b)**
5.1	Total sales revenue		
	5.1.1. Percentage of export revenue (%)		
	5.1.2. Percentage of revenue from local market (%) (Sum of the answers to 5.1.1 and 5.1.2 should be equal to 100.)		
5.2	Total sales revenue by the main product		
5.3	Revenue from renting out machines & equipment		
5.4	Revenue from technical services		
5.5	Total cost of raw material & intermediate goods		
5.6	Total cost of labor (incl. wages, bonus, social benefits)		
5.7	Electricity/telephone/water cost		
5.8	Transport cost		
5.9	Payment to sub-contractors		
5.10	Rental cost (building, equipment, machinery)		
5.11	Marketing fee (advertisement, commission and agent)		
5.12	Consultants/technical advisors fee		
5.13	Remuneration to foreign engineers/technicians/advisors/consultants		
5.14	Interest payment/bank charge		
5.15	Amortization (repayment of loan)		

5.16. What is the enterprise's current capacity utilization rate? (%) _____

5.17. What is the total replacement value of the enterprise's machinery and equipment (***in thousands***)

_____

6. Business Performance: Production Quality

6.1	Do you store raw materials in designated areas?	1. Yes, for all raw materials 2. Yes, only for certain types of raw materials (e.g, heavy or valuable) 3. No
6.2	Do you store raw materials that have not been used for a year or more?	1. Yes 2. No
6.3	Do you demarcate between corridors and work areas?	1. Yes 2. Yes, moderately 3. No
6.4	Do you place items that are not used frequently in your work area?	1. Yes 2. Yes, moderately 3. No

6.5	Do you clean your workshop after work?	1. Yes, everyday 2. Yes, once a week 3. Yes, once a month 4. Sometimes when needed 5. No
6.6	Do you store cleaning implements in designated places inside work areas?	1. Yes 2. Yes, moderately 3. No
6.7	Do you put the same raw materials and components in one space?	1. Yes 2. Yes, moderately 3. No
6.8	Do you put tool, jig and die in fixed place?	1. Yes 2. Yes, moderately 3. No
6.9	After working, do you clean and check machine and equipment every day?	1. Yes 2. Yes, moderately 3. No
6.10	Do you store products that were manufactured one month or more ago?	1. Yes 2. No
6.11	Do you store parts and work in progress that were processed one month or more ago separately?	1. Yes 2. No
6.12	Is there any store of work in progress between processes?	1. Yes 2. No
6.13	Do you know the average duration of each production activity?	1. Yes, I have measured 2. Yes, I can estimate 3. No
6.14	Do you arrange machines in line with the flow of work?	1. Yes, regularly 2. Yes, occasionally 3. No
6.15	Do you keep machines close to each other?	1. Yes 2. Yes, moderately 3. No
6.16	Which do you prioritize?	1. Meeting customer demands quickly or 2. Reducing material costs by mass production
6.17	Is there situation where certain processes are overworked and other processes are idle?	1. Yes, regularly 2. Yes, occasionally 3. No
6.18	During machine operation, do operators perform other tasks in addition to monitoring the machines?	1. Yes 2. Yes, moderately 3. No
6.19	Can you perform machine settings during work changeovers in 5 minutes or less?	1. Yes 2. No, because there is no work changeover 3. No
6.20	Can you estimate the necessary work time accurately according to the work volume?	1. Yes 2. Yes, moderately 3. No
6.21	Do you encourage workers to be multi-skilled?	1. Yes 2. Yes, moderately 3. No
6.22	Is the difference in productivity among same operation workers less than 30 percent?	1. Yes, I have measured 2. Yes, I can estimate 3. No, it is more than 30 percent 4. I don't know
6.23	Do you face machines break or any other impediments to the process control?	1. Yes, regularly 2. Yes, occasionally 3. No

6.24	Do you know the costs of production for each of your products?	1. Yes, I have measured 2. Yes, I can estimate 3. No
6.25	Is standardizing each work procedure important?	1. Yes 2. Yes, moderately 3. No 4. Don't know
6.26	How often do you change the layout of your production processes?	1. Frequently 2. Occasionally 3. Never
6.27	If the answer to 6.26 is 1 or 2, why did you change your layout?	1. Higher product demand 2. Higher costs of production 3. New production site 4. Others (Specify) _____

7. Product Quality

7.1. Do you sample raw materials before procurement from new suppliers?
(1=always yes, 2=for most materials, 3=for particular materials or suppliers,
4=occasionally or casually, 5=never) _____

7.2. Have you established quality requirements (or buying specifications) for raw materials procurement?
(1=always yes, 2=for most materials, 3=for particular materials or suppliers,
4=occasionally or casually, 5=never) _____

7.3. How often do you check the quality of raw materials before acceptance into your stores?
(1=whenever materials arrive, 2=for most materials,
3=for particular materials or suppliers, 4=occasionally or casually, 5=never) _____

7.3.1. Once in storage, how do you prevent contamination or damage or deterioration of your raw materials?

7.4. Is your enterprise mass-producing or producing a wide variety of products in small quantities?
(1= mass production, 2=diversified low-volume manufacturing) _____

7.4.1 If the answer is 1, do you produce prototypes for your products before mass production?
(1=for each product, 2=for most products, 3=for particular products,
4=sometimes, 5=never) _____

7.5. Do you (or your customers) set product specifications for each product you produce?
(1=Yes 2=No) _____

7.5.1. If yes, how successful are you in producing products that meet the product specifications that you (or your customers) have set for yourself?
(Note: Please choose any value from 0 to 10, where the value 0 means:
'extremely unsuccessful" and the value 10 means: 'extremely successful.) _____

7.6. Do you regularly inspect the first pieces (output) of each production run (batches)?
(1=Yes 2=No) _____

7.6.1. If yes, do you have inspection instructions that lay down the details of the tests to be carried out?
(1=Yes 2=No) _____

7.7. How often do you perform in-process inspection of your products?
(1=daily, 2=weekly, 3=only for new products, 4=occasionally, 5=never) _____

7.7.1. If yes, do you have inspection instructions or manuals that lay down the details of the tests to be carried out? (1=Yes 2=No) _____

7.8. How often do you inspect the quality of your product before shipping them to customers? (1= whenever the product is sold 2= at some pre-specified interval 3=only for particular products, 4=occasionally, 5=never) _____

7.8.1. If yes, do you have inspection instructions or manuals that lay down the details of the tests to be carried out? (1=Yes 2=No) _____

7.9. What do you do to prevent contamination or damage or deterioration of your products when transporting to your customers (to the market)?

7.10. Do you provide any document or certificate for quality assurance or warranty for customers buying your products?
(1=for all products, 2=for most products, 3=for some products since more than a year ago, 4=for some products since a year ago, 5=never) _____

7.10.1 If yes, for how long? (in months) _____

7.11. Does durability affect the popularity of your products?
(1=very strongly, 2=strongly, 3=to some extent, 4=sometimes, 5=never) _____

7.11.1. If yes, how do you grade the durability of your product(s) compared with the durability of the most popular imported goods in the same category?
(1=Much less durable 2=Less durable 3=About the same durability 4= More durable 5=Highly durable) _____

7.12. Does packaging affect the popularity of your products?
(1=very strongly, 2=strongly, 3=to some extent, 4=Sometimes, 5=never) _____

7.12.1 If yes, how do you grade the packaging quality of your product(s) compared with the packaging of the most popular imported goods in the same category?
(1=Much lower quality 2=Lower quality 3=About the same quality 4= Slightly better quality 5=Much better quality) _____

7.13. Do you sometime discover defects on some of your products?
(1=Yes, 2=No) _____

7.13.1 If yes, on average, what is the percentage of products having some defects? (%) _____

7.14. The table below shows possible reasons for the occurrence of quality defects in any manufacturing processes. Which of these incidences can explain product defects in your firm?

Reason for defect	(use code: 1=Very true, 2=probably true, 3=only to some extent 4=unlikely, 5=far from the reality)
1. The shop-floor operators had no clear idea what standard of quality was required	
2. The production process was such that it was very difficult to get the job right, but very easy to get it wrong	
3. The machine and equipment were incapable of achieving the quality level required	
4. The incoming raw materials and components were unsatisfactory	
5. The operators were untrained and not up to the job	
6. Shop-floor quality control was not properly planned	
7. Shop-floor quality control was not properly executed	

8. JICA Training Experiences

To Enumerator: please explain to the respondent that his/her response to these training questions will only be used for research purpose and will not affect the respondent's chances of receiving any potential benefits or being admitted to any future training by JICA or any other institution.

8.1. Have you or anyone in your enterprise participated in any training offered by JICA or any other Japanese institutions (or EDRI)
(i.e., KAIZEN training programs)? (1= yes, 2= no) _____

Enumerator: If no to 8.1., skip to question 8.2. If yes, continue to the next question.

8.1.1. If yes, when did you participate? (Year) _____

8.1.2. If yes, what did you learn (Can be multiple: 1= entrepreneurship 2=financial management 3=marketing 4= quality management 5= 5s 6=Muda, Mura and Muri 7=nothing 8=others) _____

8.1.3. Have you talked about the contents of the training with nonparticipants? (1= to many in detail, 2=leaked only limited information but to many, 3=to some in detail, 4=leaked limited information to some, 5= no) _____

8.1.3.1. If yes, did you teach them anything? (1= yes, 2= no) _____

8.2. If the answer is No to 8.1, have you heard about these training programs (i.e., about KAIZEN training programs)?
(1= yes in detail about KAIZEN, 2=yes but mostly about the outline of the program and little about the contents of the training, 3= yes only a little even about the outline, 4=heard that there were training programs, 5=not at all) _____

8.2.1. If yes to 8.2., when did you hear about the training programs (year) _____

8.2.2. If yes to 8.2, from whom did you hear of this training? (Can be multiple)
(1. from the association, 2. from one of the participants, 3. from EKI
4.from someone else.) _____

8.2.3. If the answer to 8.2.2 is 2, what did you learn from training participants?
(Can be multiple 1= entrepreneurship 2=financial management 3=marketing
4= quality management 5= 5s 6=Muda, Mura and Muri 7= nothing 8=others) _____

9. Other training experience

To Enumerator: This subsection refers to training programs other than those offered by JICA (KAIZEN training programs)

9.1	Has anyone in the enterprise including the owner, general manager or workers received any formal training?	1. Yes 2. No

If the answer to Question 9.1 is no, skip the question. If the answer is yes, let the respondent choose <u>the most representative training</u> and answer the following questions.

9.2	Type of training	1. Production 2. Marketing 3. Finance 4. Quality control 5. Others, specify
9.3	When?	
9.4	How long? (days)	
9.5	Who participated?	1. Only owner 2. Only general manager 3. Workers 4. Others, specify
9.6	Who provided?	1. Government 2. Private company 3. Association 4. Cooperative 5. Donor 6. NGO 7. UNIDO 8. Others, specify
9.7	Training cost (If free, fill in "0")	

To Enumerator: This subsection refers to willingness to pay of the respondent for future training programs.

<u>Enumerator: Read the following introduction and ask the questions</u>

IN-Company Training for quality and productivity improvement (KAIZEN)

- A KAIZEN consultant provides tailor-made solutions for your management problems
- A KAIZEN consultant provides ICT for 3 hours a day one day per week for five months
- diagnosis of your business by experienced KAIZEN consultants and industry experts through
  - ✓ Observation of your production process
  - ✓ Quality inspection of your products
  - ✓ Discussion with you and your workers

WTP1. Given your experience or reputation you have heard as well as enumerator's explanation, do you want to participate in the on-site consulting at your enterprise at the price of 4320 Birr, assuming that you have never attended a similar Kaizen training?
1. Yes 2. No (go to the next section) _____

WTP1-1. (If Yes in WTP1) I ask the question again. By paying 4320 Birr, are you really sure to participate?
(1. Definitely sure. 2. Probably sure) _____

10. Trust, Risk and Time Preference

To Enumerator: the following are General Social Survey Questions

10.1 **Trust question**: Generally speaking, would you say that (1) most people can be trusted, or (2) you need to be very careful in dealing with people? _____

10.2. **Fairness question**: Do you think (1) most people would try to take advantage of you if they got the chance, or (2) they would try to be fair? _____

10.3. **Helpful (Altruism) question**: Would you say that (1) most of the time people try to be helpful, or (2) they are mostly just looking out for themselves? _____

To Enumerator: The following questions are on risk taking behavior

10.4. **Attitude towards risk in general**. How do you see yourself: Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks? ***(Note:*** Please choose any value from 0 to 10, where the value 0 means: 'unwilling to take risks' and the value 10 means: 'fully prepared to take risk'.) _____

10.5. **Lottery Game**: You were offered a choice between receiving 2000 birr **for sure** or playing a **lottery** that paid 4000 birr with probability 0.5 and 0 birr (***nothing***) with probability 0.5. Which offer would you accept? _____

1. The first option
2. The lottery game
3. Either is fine

To Enumerator: The following questions are on Time preference

10.6. ***Eliciting discount rate:*** Suppose that someone offers you either 1000 birr tomorrow or a higher amount one month later. You are asked to choose between the following pairs. Which would you prefer?

1. A. 1000 birr tomorrow	B. 1025 birr one month later	_____
2. A. 1000 birr tomorrow	B. 1050 birr one month later	_____
3. A. 1000 birr tomorrow	B. 1100 birr one month later	_____
4. A. 1000 birr tomorrow	B. 1150 birr one month later	_____
5. A. 1000 birr tomorrow	B. 1200 birr one month later	_____
6. A. 1000 birr tomorrow	B. 1250 birr one month later	_____
7. A. 1000 birr tomorrow	B. More than 1250 birr one month later	_____

10.7. ***Hyperbolic discounting:*** Suppose that someone offers you either 1000 birr one month later or a higher amount two months later. You are asked to choose between the following pairs. Which would you prefer?

1. A. 1000 birr in one month	B. 1025 birr in two months	_____
2. A. 1000 birr in one month	B. 1050 birr in two months	_____
3. A. 1000 birr in one month	B. 1100 birr in two months	_____
4. A. 1000 birr in one month	B. 1150 birr in two months	_____
5. A. 1000 birr in one month	B. 1200 birr in two months	_____
6. A. 1000 birr in one month	B. 1250 birr in two months	_____
7. A. 1000 birr in one month	B. More than 1250 birr in two months	_____

Impact Survey

Project on Capacity Building for Dissemination

of Quality and Productivity Improvement (KAIZEN)

QUESTIONNAIRE for MSE Baseline

<Objective of the Survey>

This survey is a joint research between the Ethiopian Development Research Institute (EDRI) and the Project on Capacity Building for Dissemination of Quality and Productivity Improvement (KAIZEN) conducted by Japan International Cooperation Agency (JICA) and Ethiopian KAIZEN Institute (EKI). This survey forms part of the research study for enhancing enterprise productivity and quality of products in the Ethiopian manufacturing sector through various capacity building mechanisms including classroom and in-company KAIZEN training for selected enterprises. We promise that any information collected through the interviews will be used exclusively for the research purpose.

<Enumerator>

Before proceeding to the survey questions, please make sure that you have explained the objective of the survey clearly to the respondent. The respondent should also be convinced that the information obtained is private, and EDRI would not reveal the respondent's name, enterprise name, or any other identifying information to a third party.

Note: a) Use Ethiopian Calendar (EC) year for all related questions in this questionnaire.
b) Check (✓) on the appropriate number for the multiple-choice questions.
c) Use the following codes: - 77 for "Not applicable"
- 88 for "Do not know"
- 99 for "Refusal"

	Name	Completed date	Comments	Signature
Enumerator				
Supervisor				
Data verifier				

1. Date of Survey

1.1	Day		1.2	Month		1.3	Year	

2. Respondent Information

To Enumerator: Please understand that the respondent should be the general manager or equivalent at the top decision maker of the enterprise. If you cannot interview the general manager, please get an appointment to speak with him at some later date.

2.1	Name	
2.2	Position	1. Owner and GM (or equivalent) 2. GM (or equivalent) but not owner 3. Vice manager 4. Production manager 5. Spouse of owner 6. Child of owner 7. Others, specify _____
2.3	Tel	
2.4	Age	
2.5	Sex (1=Male 2=Female)	

2.6	Highest level of education	1. No formal schooling 2. Primary school 3. High school 4. Vocational school 5. University/college
2.7	Years of schooling	
2.8	Do you have prior experience working in the manufacturing sector	1. Yes 2. No
	2.8.1. If yes, for how many years?	
	2.8.2. If yes to 2.8, in which of the following sectors?	1. Agro-processing 2. Chemical 3. Leather & footwear 4. Metal 5. Textile & Garment 6. Others
2.11.	Do you have prior trading experience?	1. Yes, as a retailer 2. Yes, as a wholesaler 3. Yes, salesperson, sales or purchasing manager 4. Yes others 5. No
	2.11.1. If yes, for how many years?	
2.12	Do you have prior management experience?	1. Yes, top-level 2. Yes, middle-level 3. Yes, low-level 4. No
	2.12.1. If yes, for how many years?	
2.13	Years of management experience (at the current enterprise)	

3. Enterprise General Information

3.1	Enterprise name			
3.2	ID code			
3.3	Enterprise tel number	Fixed line:	Mobile:	
3.4	E-mail			
3.5.	Website			
3.6	Sub-city			
3.7	Woreda			
3.8	Local name			
3.9	House no.			
3.10	Description of how to get to the enterprise			
3.11	Year of establishment			
3.12	Sub-sector	1. Food-processing 2. Precast 3. Leather & footwear 4. Wood and metalwork 5. Textile & Garment 6. Construction 7. Others, specify _____		
3.13	Main product			
3.14	Second main product			
3.15	Third main product			
3.16	Type of sales channel (%)			
	3.16.1. Direct sales to users using own retail store		3.16.3. wholesalers	
	3.16.2. Other retail stores		3.16.4. Direct exporting	

3.17	Number of workshops			
3.18	Enterprise current ownership	1. Domestic private 2. State owned 3. Foreign owned 4. Joint venture 5. Cooperative 6. Others, specify _____		
3.19	Is the enterprise registered for VAT?	1=Yes 2=No	3.20. Does the enterprise have TIN?	1=Yes 2=No

4. Business Performance: Employment (as of the time of data collection)

To Enumerator: Number of persons engaged should include the General Manager and other managers as well as supervisors, foremen and quality control personnel.

4.1	Number of persons engaged (permanent and temporary)	
	How many of these are	***Enumerator: Be sure that the sum of the first three and the last two each should be equal to the total number of persons engaged***
	4.1.1. Paid workers	
	4.1.2. Unpaid family workers	
	4.1.3. Apprentices and likes	
	4.1.4. Male	
	4.1.5. Female	
4.2	Total number of production workers	
	How many of these are	***Enumerator: Be sure that the sum of 4.2.1 and 4.2.2 should be equal to 4.2***
	4.2.1. Permanent	
	4.2.2. Temporary	
4.3	Total number of supervisors, foremen and quality control personnel	
4.4.	Total number of managers including low level managers	
4.5	Number of marketing workers (permanent and temporary)	
4.6	Main payment arrangement of production workers	1. Piece rate 2. Daily basis 3. Weekly basis 4. Fortnight basis 5. Monthly basis 6. Others, specify _____

5. Business Performance: Sales and Cost

To Enumerator: When filling in this section, please make sure that you do not omit or add more zeros than the respondents answer. Note that the figures correspond to the months of August and September, 2012.

		August, 2012 (Nehase, 2004)	September, 2012 (Meskerem 2005)
		(a)	**(b)**
5.1	Total sales revenue		
	5.1.1. Percentage of export revenue (%)		
	5.1.2. Percentage of revenue from local market (%) (Sum of the answers to 5.1.1 and 5.1.2 should be equal to 100.)		
5.2	Total sales revenue by the main product		
5.3	Revenue from renting out machines & equipment		
5.4	Revenue from technical services		
5.5	Total cost of raw material & intermediate goods		
5.6	Total cost of labor (incl. wages, bonus, social benefits)		
5.7	Electricity/telephone/water cost		
5.8	Transport cost		
5.9	Payment to sub-contractors		
5.10	Rental cost (building, equipment, machinery)		
5.11	Marketing fee (advertisement, commission and agent)		
5.12	Consultants/technical advisors fee		
5.13	Remuneration to foreign engineers/technicians/advisors/consultants		
5.14	Interest payment/bank charge		
5.15	Amortization (repayment of loan)		

5.16. What is the enterprise's current capacity utilization rate? (%) _____

5.17. What is the total replacement value of the enterprise's machinery and equipment? _____

5.18. What was your total monthly sales revenue during peak business periods in the year 2004 EC? _____

5.19. What was your total monthly sales revenue during slack business periods in the year 2004 EC? _____

5.20. What was the total income the business earning during the month of **Meskerem 2005**, after paying all expenses including the wages of employees, but not including any income you paid yourself. That is, what were the profits of your business during **Meskerem 2005?** _____

6. Business Performance: Production Quality

6.1	Do you store raw materials in designated areas?	1. Yes, for all raw materials 2. Yes, only for certain types of raw materials (e.g, heavy or valuable) 3. No
6.2	Do you store raw materials that have not been used for a year or more?	1. Yes 2. No
6.3	Do you demarcate between corridors and work areas?	1. Yes 2. Yes, moderately 3. No
6.4	Do you place items that are not used frequently in your work area?	1. Yes 2. Yes, moderately 3. No
6.5	Do you clean your workshop after work?	1. Yes, everyday 2. Yes, once a week 3. Yes, once a month 4. Sometimes when needed 5. No
6.6	Do you store cleaning implements in designated places inside work areas?	1. Yes 2. Yes, moderately 3. No
6.7	Do you put the same raw materials and components in one space?	1. Yes 2. Yes, moderately 3. No
6.8	Do you put tool, jig and die in fixed place?	1. Yes 2. Yes, moderately 3. No
6.9	After working, do you clean and check machine and equipment every day?	1. Yes 2. Yes, moderately 3. No
6.10	Do you store products that were manufactured one month or more ago?	1. Yes 2. No
6.11	Do you store parts and work in progress that were processed one month or more ago separately?	1. Yes 2. No
6.12	Is there any store of work in progress between processes?	1. Yes 2. No
6.13	Do you know the average duration of each production activity?	1. Yes, I have measured 2. Yes, I can estimate 3. No
6.14	Do you arrange machines in line with the flow of work?	1. Yes, regularly 2. Yes, occasionally 3. No
6.15	Do you keep machines close to each other?	1. Yes 2. Yes, moderately 3. No
6.16	Which do you prioritize?	1. Meeting customer demands quickly or 2. Reducing material costs by mass production
6.17	Is there situation where certain processes are overworked and other processes are idle?	1. Yes, regularly 2. Yes, occasionally 3. No
6.18	During machine operation, do operators perform other tasks in addition to monitoring the machines?	1. Yes 2. Yes, moderately 3. No

6.19	Can you perform machine settings during work changeovers in 5 minutes or less?	1. Yes 2. No, because there is no work changeover 3. No
6.20	Can you estimate the necessary work time accurately according to the work volume?	1. Yes 2. Yes, moderately 3. No
6.21	Do you encourage workers to be multi-skilled?	1. Yes 2. Yes, moderately 3. No
6.22	Is the difference in productivity among same operation workers less than 30 percent?	1. Yes, I have measured 2. Yes, I can estimate 3. No, it is more than 30 percent 4. I don't know
6.23	Do you face machines break or any other impediments to the process control?	1. Yes, regularly 2. Yes, occasionally 3. No
6.24	Do you know the costs of production for each of your products?	1. Yes, I have measured 2. Yes, I can estimate 3. No
6.25	Is standardizing each work procedure important?	1. Yes 2. Yes, moderately 3. No 4. Don't know
6.26	How often do you change the layout of your production processes?	1. Frequently 2. Occasionally 3. Never
6.27	If the answer to 6.26 is 1 or 2, why did you change your layout?	1. Higher product demand 2. Higher costs of production 3. New production site 4. Others (Specify) _____

7. Product Quality

7.1. Do you sample raw materials before procurement from new suppliers?
(1=always yes, 2=for most materials, 3=for particular materials or suppliers,
4=occasionally or casually, 5=never) _____

7.2. Have you established quality requirements (or buying specifications) for raw materials procurement?
(1=always yes, 2=for most materials, 3=for particular materials or suppliers,
4=occasionally or casually, 5=never) _____

7.3. How often do you check the quality of raw materials before acceptance into your stores?
(1=whenever materials arrive, 2=for most materials,
3=for particular materials or suppliers, 4=occasionally or casually, 5=never) _____

7.3.1. Once in storage, how do you prevent contamination or damage or deterioration of your raw materials?

7.4. Is your enterprise mass-producing or producing a wide variety of products in small quantities? (1= mass production, 2=diversified low-volume manufacturing) _____

7.4.1 If the answer is 1, do you produce prototypes for your products before mass production? (1=for each product, 2=for most products, 3=for particular products, 4=sometimes, 5=never) _____

7.5. Do you (or your customers) set product specifications for each product you produce? (1=Yes 2=No) _____

7.5.1. If yes, how successful are you in producing products that meet the product specifications that you (or your customers) have set for yourself? (Note: Please choose any value from 0 to 10, where the value 0 means: 'extremely unsuccessful" and the value 10 means: 'extremely successful.) _____

7.6. Do you regularly inspect the first pieces (output) of each production run (batches)? (1=Yes 2=No) _____

7.6.1. If yes, do you have inspection instructions that lay down the details of the tests to be carried out? (1=Yes 2=No) _____

7.7. How often do you perform in-process inspection of your products? (1=daily, 2=weekly, 3=only for new products, 4=occasionally, 5=never) _____

7.7.1. If yes, do you have inspection instructions or manuals that lay down the details of the tests to be carried out? (1=Yes 2=No) _____

7.8. How often do you inspect the quality of your product before shipping them to customers? (1= whenever the product is sold 2= at some pre-specified interval 3=only for particular products, 4=occasionally, 5=never) _____

7.8.1. If yes, do you have inspection instructions or manuals that lay down the details of the tests to be carried out? (1=Yes 2=No) _____

7.9. What do you do to prevent contamination or damage or deterioration of your products when transporting to your customers (to the market)?

7.10. Do you provide any document or certificate for quality assurance or warranty for customers buying your products? (1=for all products, 2=for most products, 3=for some products since more than a year ago, 4=for some products since a year ago, 5=never) _____

7.10.1 If yes, for how long? (in months) _____

7.11. Does durability affect the popularity of your products? (1=very strongly, 2=strongly, 3=to some extent, 4=sometimes, 5=never) _____

7.11.1. If yes, how do you grade the durability of your product(s) compared with the durability of the most popular imported goods in the same category? (1=Much less durable 2=Less durable 3=About the same durability 4= More durable 5=Highly durable) _____

7.12. Does packaging affect the popularity of your products? (1=very strongly, 2=strongly, 3=to some extent, 4=Sometimes, 5=never) _____

7.12.1 If yes, how do you grade the packaging quality of your product(s) compared with the packaging of the most popular imported goods in the same category? (1=Much lower quality 2=Lower quality 3=About the same quality 4= Slightly better quality 5=Much better quality) _____

7.13. Do you sometime discover defects on some of your products? (1=Yes, 2=No) _____

7.13.1 If yes, on average, what is the percentage of products having some defects? (%) _____

7.14. The table below shows possible reasons for the occurrence of quality defects in any manufacturing processes. Which of these incidences can explain product defects in your firm?

Reason for defect	(use code: 1=Very true, 2=probably true, 3=only to some extent 4=unlikely, 5=far from the reality)
1. The shop-floor operators had no clear idea what standard of quality was required	
2. The production process was such that it was very difficult to get the job right, but very easy to get it wrong	
3. The machine and equipment were incapable of achieving the quality level required	
4. The incoming raw materials and components were unsatisfactory	
5. The operators were untrained and not up to the job	
6. Shop-floor quality control was not properly planned	
7. Shop-floor quality control was not properly executed	

8. JICA Training Experiences

To Enumerator: please explain to the respondent that his/her response to these training questions will only be used for research purpose and will not affect the respondent's chances of receiving any potential benefits or being admitted to any future training by JICA or any other institution.

8.1. Have you or anyone in your enterprise participated in any training offered by JICA or any other Japanese institutions (or EDRI) (i.e., KAIZEN training programs)? (1= yes, 2= no) _____

Enumerator: If no to 8.1., skip to question 8.2. If yes, continue to the next question.

8.1.1. If yes, when did you participate? (Year) _____

8.1.2. If yes, what did you learn (Can be multiple: 1= entrepreneurship 2=financial management 3=marketing 4= quality management 5= 5s 6=Muda, Mura and Muri 7=nothing 8=others) _____

8.1.3. Have you talked about the contents of the training with nonparticipants? (1= to many in detail, 2=leaked only limited information but to many, 3=to some in detail, 4=leaked limited information to some, 5= no) _____

8.1.3.1. If yes, did you teach them anything? (1= yes, 2= no) _____

8.2. If the answer is No to 8.1, have you heard about these training programs (i.e., about KAIZEN training programs)? (1= yes in detail about KAIZEN, 2=yes but mostly about the outline of the program and little

about the contents of the training, 3= yes only a little even about the outline, 4=heard that there were training programs, 5=not at all) _____

8.2.1. If yes to 8.2., when did you hear about the training programs (year) _____

8.2.2. If yes to 8.2, from whom did you hear of this training? (Can be multiple)
(1. from the association, 2. from one of the participants, 3. from EKI
4.from someone else.) _____

8.2.3. If the answer to 8.2.2 is 2, what did you learn from training participants?
(Can be multiple 1= entrepreneurship 2=financial management 3=marketing
4= quality management 5= 5s 6=Muda, Mura and Muri 7= nothing 8=others) _____

9. Other training experience

To Enumerator: This subsection refers to training programs other than those offered by JICA (KAIZEN training programs)

9.1	Has anyone in the enterprise including the owner, general manager or workers received any formal training?	1. Yes 2. No

If the answer to Question 9.1 is no, skip the question. If the answer is yes, let the respondent choose <u>the most representative training</u> and answer the following questions.

9.2	Type of training	1. Production 2. Marketing 3. Finance 4. Quality control 5. Others, specify
9.3	When?	
9.4	How long? (days)	
9.5	Who participated?	1. Only owner 2. Only general manager 3. Workers 4. Others, specify
9.6	Who provided?	1. Government 2. Private company 3. Association 4. Cooperative 5. Donor 6. NGO 7. UNIDO 8. Others, specify
9.7	Training cost (If free, fill in “0”)	

To Enumerator: This subsection refers to willingness to pay of the respondent for future training programs.

Enumerator: Read the following introduction and ask the questions

IN-Company Training for quality and productivity improvement (KAIZEN)
- A KAIZEN consultant provides tailor-made solutions for your management problems
- A KAIZEN consultant provides ICT for 3 hours a day one day per week for five months
- diagnosis of your business by experienced KAIZEN consultants and industry experts through
  - ✓ Observation of your production process
  - ✓ Quality inspection of your products
  - ✓ Discussion with you and your workers

WTP1. Given your experience or reputation you have heard as well as enumerator's explanation, do you want to participate in the on-site consulting at your enterprise at the price of 4320 Birr, assuming that you have never attended a similar Kaizen training?
1. Yes 2. No (go to the next section) _____

WTP1-1. (If Yes in WTP1) I ask the question again. By paying 4320 Birr, are you really sure to participate?
(1. Definitely sure. 2. Probably sure) _____

10. Trust, Risk and Time Preference

To Enumerator: the following are General Social Survey Questions

10.1 **Trust question**: Generally speaking, would you say that (1) most people can be trusted, or (2) you need to be very careful in dealing with people? _____

10.2. **Fairness question**: Do you think (1) most people would try to take advantage of you if they got the chance, or (2) they would try to be fair? _____

10.3. **Helpful (Altruism) question**: Would you say that (1) most of the time people try to be helpful, or (2) they are mostly just looking out for themselves? _____

To Enumerator: The following questions are on risk taking behavior

10.4. **Attitude towards risk in general**. How do you see yourself: Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks? ***(Note:*** Please choose any value from 0 to 10, where the value 0 means: 'unwilling to take risks' and the value 10 means: 'fully prepared to take risk'.) _____

10.5. **Lottery Game**: You were offered a choice between receiving 2000 birr **for sure** or playing a **lottery** that paid 4000 birr with probability 0.5 and 0 birr (***nothing***) with probability 0.5. Which offer would you accept? _____

1. The first option
2. The lottery game
3. Either is fine

To Enumerator: The following questions are on Time preference

10.6. ***Eliciting discount rate:*** Suppose that someone offers you either 1000 birr tomorrow or a higher amount one month later. You are asked to choose between the following pairs. Which would you prefer?

1. A. 1000 birr tomorrow B. 1025 birr one month later _____
2. A. 1000 birr tomorrow B. 1050 birr one month later _____
3. A. 1000 birr tomorrow B. 1100 birr one month later _____
4. A. 1000 birr tomorrow B. 1150 birr one month later _____

5. A. 1000 birr tomorrow B. 1200 birr one month later _____
6. A. 1000 birr tomorrow B. 1250 birr one month later _____
7. A. 1000 birr tomorrow B. More than 1250 birr one month later _____

10.7. ***Hyperbolic discounting:*** Suppose that someone offers you either 1000 birr one month later or a higher amount two months later. You are asked to choose between the following pairs. Which would you prefer?

1. A. 1000 birr in one month B. 1025 birr in two months _____
2. A. 1000 birr in one month B. 1050 birr in two months _____
3. A. 1000 birr in one month B. 1100 birr in two months _____
4. A. 1000 birr in one month B. 1150 birr in two months _____
5. A. 1000 birr in one month B. 1200 birr in two months _____
6. A. 1000 birr in one month B. 1250 birr in two months _____
7. A. 1000 birr in one month B. More than 1250 birr in two months _____

11. Financial Literacy

Enumerator: Read each of the questions and ask a respondent for choosing one that he/she thinks most appropriate.

11.1. In preparing budget for your household, which of the following needs to be included?

1. Your income
2. Your expenses
3. Both income and expenses

11.2. Do you think you can open a bank account with an amount as low as 50 birr?

1. Yes
2. No
3. Don't know

11.3. Suppose you borrow 1000 birr from a money lender at an interest rate of 2 percent per month, with no repayment for three months. After three months do you owe:

1. Less than 1020 birr
2. Exactly 1020 birr
3. Greater than 1020 birr
4. Don't know

11.4 If you have 1000 birr in a saving account earning 1% interest per annum, and prices for goods and services rise at 2 % over a one year period, with the money in your account you can buy:

1. More goods and services in one year time compared to today.
2. Less goods and services in one year time compared to today
3. The same amount of goods and services in one year time compared to today
4. Don't know

11.5 Is it riskier to sell multiple types of goods compared to one type of good?

1. Yes
2. No
3. Don't know

11.6. Suppose you need to borrow 500 birr. Two people offer you a loan. One loan requires you to pay back 600 birr in one month. The second loan requires you to pay back 500 birr plus 15 % interest rate in one month time. Which loan would you prefer?

1. The first loan
2. The second loan
3. Both are equal
4. Don't know

Enumerator: *Tell the respondent that you are n*ow going to ask him/her about the following six cognitive skills questions in 10 minutes, **without using a calculator**. Please make sure that the respondent understands that these types of question are standard in MSEs studies.

11.7 Suppose that you use a truck to transport 500 boxes from your workshop to a destination. If the truck can carry at most 70 boxes at one time, how many trips does the truck have to make to finish transporting the 500 boxes to the destination? _____

11.8. To buy a book for 50 birr, Abebe spent 20 % of the money he had. How much had he had initially? _____

11.9 Almaz bought a 1000 birr machine at a 20% discount. How much did she pay for the machine? _____

11.10. What is 4 times 7? _____

11.11. In the question there are two pairs of numbers linked together in some way. Next there are two more numbers that are linked in exactly the same way. Finish off the third pair by working out how the numbers are paired. [4 → 3], [9 → 8], 7 →?],

1. 5
2. 4
3. 6
4. 8

11.12. The following three figures are similar in some way.



From the choices given below, select the figure that is similar to the three figures indicated above.

1. 
2. 
3. 
4. 
5. 

General Questions

11.13 Why are you running this business? (Choose only one)

1. No wage job alternative
2. Had a wage job alternative but opted for self employment because of the freedom it render
3. Had a wage job alternative but opted for self employment because of the better income that could be generated 4. Other (specify) _____

11.14. Suppose that you would be paid for your work in one of the following two ways. In the first way, your pay depends only on the quantity and quality of your work. It is independent of other people's performance. So, this pay system is based on absolute evaluation. The second way of payment is based on relative evaluation. In this system, your performance is compared with other people's performance. Only a few top prize winners are paid large amounts of money and the others receive small amounts of money. Which pay system do you prefer? 1 (Absolute), 2 (Relative).

12. Networking questions

Enumerator: Please tell the respondent, "I am now going to ask about some of the business people you may know"

					Enumerator: Ask these questions only about people to whom the respondent has spoken to **Have you discussed with this person about... [1=Yes, 2=No]**	
SN	**Name of the firm**	**Name of the businessperson**	**Do you know who this person (firm) is? [1=Yes, 2=No]**	**Have you ever spoken to this person? [1=Yes, 2=No]**	**Kaizen management training program?**	**Management skills not taught in the Kaizen management training program?**
			Network_a	**Network_b**	**Network_c**	**Network_d**
N1	Tagilo menore wood & Metal work Assocation ታግሎ መኖር የእ/ብ/ብረት ስራ ማህበር	Mekonnen Bizuneh				
N2	Luyabu Wood & Metal Works Assocation ሉአብ የእ/ብ/ብ ስራ ማህበር	Leuleseged Gezachew				
N3	Hubere Wood & Metal Works Assocation ኀብር የእ/ብ/ብ ስራ ማህበር	Samuele Fetealem				
N4	Legajere wood & Metal work Assocation ሌግጀሪ የእ/ብ/ብረት ስራ ማህበር	Yohannes Alemayehu				
N5	Lankna wood & Metal work Assocation ላንቅና እ/ብ/ብረት ስራ ማህበር					
N6	Big 5 wood & Metal work Assocation ቢግ 5 እ/ብ/ብ ስራ ማህበር	Biserate Tadele				
N7	Sores Wood works Assocation ሶሪሳ የእ/ስራ ማህበር	Tebarke Shemsu				
N8	Yedaget Besra Food Processing እድገት በስራ ም/ዝ					
N9	Sultan Seid	Sultan				
N10	Behata Mulatu	Behata				
N11	Aemerda Wood Metal Works Assocation አማርድ የእ/ብ/ብ ስራ ማህበር	Dereje Shifa				
N12	Eleshaday wood & Metal work ኤልሻዳይ እ/ብ/ብረት	Yetena Bogele				
N13	Lalebala wood & Metal work ላሊበላ እ/ብ/ብረት	Alem W/Gebreal				
N14	Millenium hulagabe Constuction ሚሊኒየም ሁለገብ ኮንስትራክሽን					
N15	Yedaget Beyeberte እድገት በሀብረት					
N16	Besufekad wood & Metal work በሱፍቃድ እ/ብ/ብረት	Teshome Alemayehu				
N17	Lucy wood & Metal work ሉሲ እ/ብ/ብረት	Kedir Muktar				
N18	Rute Wood & Metal Works ሩት እ/ብ/ብ	Jokabed Tadesse				
N19	Afechowe Bere አፍንፏ በር					
N20	Sekete Besra Wood & Metal Works ስኬት በስራ እ/ብ/ብ					
N21	Madeg Bagere Food Processing ማደግ በአገር ምግብ ዝግጅት	Genete				
N22	Sebatega akababi Tailer ሰባተኛ አካባቢ ልብስ ስፌት					
N23	enatoch Food processing እናቶች ምግብ ዝግጅት					
N24	Lodon Shoe Maker ለንደን ጫማ					
N25	Mahebera Salam ማህበረ ሰላም					
N26	googlenet Metal works ጎግልኔት ብረታ ብረት	Addisu Sema				

SN	Name of the firm	Name of the businessperson	Do you know who this person (firm) is? [1=Yes, 2=No]	Have you ever spoken to this person? [1=Yes, 2=No]	Kaizen management training program?	Management skills not taught in the Kaizen management training program?
			Network_a	Network_b	Network_c	Network_d
N27	Fikur salme Dry Food processing ፍቅረ ሰለማ ደረቅ ምግብ ዝግጅት	Terefu Terefe				
N28	Segerda Dry Food ፅጌረዳ ደረቅ ምግብ	Tsege Makuria				
N29	T.M Wood & Metal Works ቲ.ኤም እ/ብ/ብ					
N30	Getahun Gerberhowet ጌታሁን ገ/ህይወት	Getahun				
N31	Maya Metal & Wood Works ማያ እ/ብ/ብ	Muhammed				
N32	AAMW Wood & Metal Works ኤኤም ደ.ብሊው እ/ብ/ብ	Abrham				
N33	Mac Engineering ማክ ኢንጅነሪንግ					
N34	Mulemebet Construction ሙሉአመቤት ኮንስትራክሽን					
N35	Aelem teqelala Construction ኤልም ጠቅላላ ኮ/ሽን					
N36	Yedagete Behberte Construction እድገት በህብረት ኮንስትራክሽን					
N37	Saternu Percast Beme Assocation ሳተርኑ ፕሪካስት ቢም ህ/ስራ					
N38	Tazaze Wood & Metal Works ታዛዥ እንጨትና ብ/ብረት					
N39	National Fiber Glass ናሽናል ፋይበር ግላስ	Mekonnen				
N40	Getachew Wood & Metal Works ጌታቸው እ/ብ/ብረት	Getachew Tegegne				
N41	DFD	Datewe				
N42	Mirakle ሚራክል					
N43	Bedulow በድሉ					
N44	Addisworufuael አዲስወሩፋኤል	Addis				
N45	Labagonewoe ለበጎነው					
N46	Tebaber Lsera Food Processing ትብበር ለስራ ምግብ ዝግጅት					
N47	Fikure Fire ፍቅር ፍሬ					
N48	yebeste Bread Perepation ህብስት ዳቦ አምራች					
N49	Yedaget Balatena Food Processing እድገት ባልትና ም/ዝ					
N50	Tesafa Besera ተስፋ በስራ					
N51	Kidanmhiret Blatena ኪዳነምህረት ባልትና					
N52	Daniel Hailemariam Wood & Metal Works	Daniel Hailemariam				
N53	**Someone else than those listed above**					

Impact Survey

Project on Capacity Building for Dissemination

of Quality and Productivity Improvement (KAIZEN)

QUESTIONNAIRE for LME follow up

Questionnaire ID _____ Partcipant (1. Yes 2. No)_____

<Objective of the Survey>

This survey is a joint research between the Ethiopian Development Research Institute (EDRI) and the Project on Capacity Building for Dissemination of Quality and Productivity Improvement (KAIZEN) conducted by Japan International Cooperation Agency (JICA) and Ethiopian KAIZEN Institute (EKI). This survey forms part of the research study for enhancing enterprise productivity and quality of products in the Ethiopian manufacturing sector through various capacity building mechanisms including classroom and in-company KAIZEN training for selected enterprises. We promise that any information collected through the interviews will be used exclusively for the research purpose.

<Enumerator>

Before proceeding to the survey questions, please make sure that you have explained the objective of the survey clearly to the respondent. The respondent should also be convinced that the information obtained is private, and EDRI would not reveal the respondent's name, enterprise name, or any other identifying information to a third party.

Note: a) Use Ethiopian Calendar (EC) year for all related questions in this questionnaire.
b) Check (✓) on the appropriate number for the multiple-choice questions.
c) Use the following codes: - 77 for "Not applicable"
- 88 for "Do not know"
- 99 for "Refusal"

	Name	Completed date	Comments	Signature
Enumerator				
Supervisor				
Data verifier				

1. Date of Survey

1.1	Day		1.2	Month		1.3	Year	

2. Respondent Information

To Enumerator: Please understand that the respondent should be the same person who was interviewed for the baseline survey. If this person is not available, please ask for the general manager or equivalent at the top decision maker of the enterprise. If you cannot interview the general manager, please get an appointment to speak with him at some later date.

2.1	Name		
	2.1.1	Enumerator: Respondent is the same person that was interviewed for the baseline survey?	1. Yes 2. No

2.2	Position	1. Owner and GM (or equivalent) 2. GM (or equivalent) but not owner 3. Vice manager 4. Production manager 5. Spouse of owner 6. Child of owner 7. Others, specify _____
2.3	Tel	
2.4	Age	
2.5	Sex (1=Male 2=Female)	
2.6	Highest level of education	1. No formal schooling 2. Primary school 3. High school 4. Vocational school 5. University/college
2.7	Years of schooling	
2.8	Do you have prior experience working in the manufacturing sector	1. Yes 2. No
	2.8.1. If yes, for how many years?	
	2.8.2. If yes to 2.8, in which of the following sectors?	1. Agro-processing 2. Chemical 3. Leather & footwear 4. Metal 5. Textile & Garment 6. Others
2.11.	Do you have prior trading experience?	1. Yes, as a retailer 2. Yes, as a wholesaler 3. Yes, salesperson, sales or purchasing manager 4. Yes others 5. No
	2.11.1. If yes, for how many years?	
2.12	Do you have prior management experience?	1. Yes, top-level 2. Yes, middle-level 3. Yes, low-level 4. No
	2.12.1. If yes, for how many years?	
2.13	Years of management experience (at the current enterprise)	

3. Enterprise General Information

3.1	Enterprise name		
3.2	ID code		
3.3	Enterprise tel number	Fixed line:	Mobile:
3.4	E-mail		
3.5.	Website		
3.6	Sub-city		
3.7	Woreda		
3.8	Local name		
3.9	House no.		
3.10	Description of how to get to the enterprise		
	3.10.1. Number of sign boards in the vicinity of the enterprise		
3.11	Year of establishment		

3.12	Sub-sector	1. Agro-processing 2. Chemical 3. Leather & footwear 4. Metal 5. Textile & Garment 6. Woodwork 7. Others, specify _____		
3.13	Main product			
3.14	Second main product			
3.15	Third main product			
3.16	Type of sales channel (%)			
	3.16.1. Direct sales to users using own retail store		3.16.3. wholesalers	
	3.16.2. Other retail stores		3.16.4. Direct exporting	
3.17	Number of plants			
3.18	Enterprise current ownership	1. Domestic private 2. State owned 3. Foreign owned 4. Joint venture 5. Cooperative 6. Others, specify _____		

4. Business Performance: Employment (as of the time of data collection)

To Enumerator: Number of persons engaged should include the General Manager and other managers as well as supervisors, foremen and quality control personnel.

4.1	Number of persons engaged (permanent and temporary)	
	How many of these are	***Enumerator: Be sure that the sum of the first three and the last two each should be equal to the total number of persons engaged***
	4.1.1. Paid workers	
	4.1.2. Unpaid family workers	
	4.1.3. Apprentices and likes	
	4.1.4. Male	
	4.1.5. Female	
4.2	Total number of production workers	
	How many of these are	***Enumerator: Be sure that the sum of 4.2.1 and 4.2.2 should be equal to 4.2***
	4.2.1. Permanent	
	4.2.2. Temporary	
4.3	Total number of supervisors, foremen and quality control personnel	
4.4.	Total number of managers including low level managers	
4.5	Number of marketing workers (permanent and temporary)	
4.6	Main payment arrangement of production workers	1. Piece rate 2. Daily basis 3. Weekly basis 4. Fortnight basis 5. Monthly basis 6. Others, specify _____

5. Business Performance: Sales and Cost

To Enumerator: When filling in this section, please make sure that you do not omit or add more zeros than the respondents answer. By referring to the financial record of the enterprise, please also check whether the respondent under or overstated the figures. Please also note that *all figures should be in thousands.*

		July 2012-June 2013 (Hamele 2004-Sene2005)	July 2013-March 2014 (Hamele 2005-Megabit 2006)
		(a)	**(b)**
5.1	Total sales revenue		
	5.1.1. Percentage of export revenue (%)		
	5.1.2. Percentage of revenue from local market (%) (Sum of the answers to 5.1.1 and 5.1.2 should be equal to 100.)		
5.2	Total sales revenue by the main product		
5.3	Revenue from renting out machines & equipment		
5.4	Revenue from technical services		
5.5	Total cost of raw material & intermediate goods		
5.6	Total cost of labor (incl. wages, bonus, social benefits)		
5.7	Electricity/telephone/water cost		
5.8	Transport cost		
5.9	Payment to sub-contractors		
5.10	Rental cost (building, equipment, machinery)		
5.11	Marketing fee (advertisement, commission and agent)		
5.12	Consultants/technical advisors fee		
5.13	Remuneration to foreign engineers/technicians/advisors/consultants		
5.14	Interest payment/bank charge		
5.15	Amortization (repayment of loan)		

5.16. What is the enterprise's current capacity utilization rate? (%) _____

5.17. What is the total replacement value of the enterprise's machinery and equipment (***in thousands***)

_____

6. Business Performance: Production Quality

6.1	Do you store raw materials in designated areas?	1. Yes, for all raw materials 2. Yes, only for certain types of raw materials (e.g, heavy or valuable) 3. No
6.2	Do you store raw materials that have not been used for a year or more?	1. Yes 2. No
6.3	Do you demarcate between corridors and work areas?	1. Yes 2. Yes, moderately 3. No
6.4	Do you place items that are not used frequently in your work area?	1. Yes 2. Yes, moderately 3. No

6.5	Do you clean your workshop after work?	1. Yes, everyday 2. Yes, once a week 3. Yes, once a month 4. Sometimes when needed 5. No
6.6	Do you store cleaning implements in designated places inside work areas?	1. Yes 2. Yes, moderately 3. No
6.7	Do you put the same raw materials and components in one space?	1. Yes 2. Yes, moderately 3. No
6.8	Do you put tool, jig and die in fixed place?	1. Yes 2. Yes, moderately 3. No
6.9	After working, do you clean and check machine and equipment every day?	1. Yes 2. Yes, moderately 3. No
6.10	Do you store products that were manufactured one month or more ago?	1. Yes 2. No
6.11	Do you store parts and work in progress that were processed one month or more ago separately?	1. Yes 2. No
6.12	Is there any store of work in progress between processes?	1. Yes 2. No
6.13	Do you know the average duration of each production activity?	1. Yes, I have measured 2. Yes, I can estimate 3. No
6.14	Do you arrange machines in line with the flow of work?	1. Yes, regularly 2. Yes, occasionally 3. No
6.15	Do you keep machines close to each other?	1. Yes 2. Yes, moderately 3. No
6.16	Which do you prioritize?	1. Meeting customer demands quickly or 2. Reducing material costs by mass production
6.17	Is there situation where certain processes are overworked and other processes are idle?	1. Yes, regularly 2. Yes, occasionally 3. No
6.18	During machine operation, do operators perform other tasks in addition to monitoring the machines?	1. Yes 2. Yes, moderately 3. No
6.19	Can you perform machine settings during work changeovers in 5 minutes or less?	1. Yes 2. No, because there is no work changeover 3. No
6.20	Can you estimate the necessary work time accurately according to the work volume?	1. Yes 2. Yes, moderately 3. No
6.21	Do you encourage workers to be multi-skilled?	1. Yes 2. Yes, moderately 3. No
6.22	Is the difference in productivity among same operation workers less than 30 percent?	1. Yes, I have measured 2. Yes, I can estimate 3. No, it is more than 30 percent 4. I don't know
6.23	Do you face machines break or any other impediments to the process control?	1. Yes, regularly 2. Yes, occasionally 3. No

6.24	Do you know the costs of production for each of your products?	1. Yes, I have measured 2. Yes, I can estimate 3. No
6.25	Is standardizing each work procedure important?	1. Yes 2. Yes, moderately 3. No 4. Don't know
6.26	How often do you change the layout of your production processes?	1. Frequently 2. Occasionally 3. Never
6.27	If the answer to 6.26 is 1 or 2, why did you change your layout?	1. Higher product demand 2. Higher costs of production 3. New production site 4. Others (Specify) _____

7. Product Quality

7.1. Do you sample raw materials before procurement from new suppliers?
(1=always yes, 2=for most materials, 3=for particular materials or suppliers,
4=occasionally or casually, 5=never) _____

7.2. Have you established quality requirements (or buying specifications) for raw materials procurement?
(1=always yes, 2=for most materials, 3=for particular materials or suppliers,
4=occasionally or casually, 5=never) _____

7.3. How often do you check the quality of raw materials before acceptance into your stores?
(1=whenever materials arrive, 2=for most materials,
3=for particular materials or suppliers, 4=occasionally or casually, 5=never) _____

7.3.1. Once in storage, how do you prevent contamination or damage or deterioration of your raw materials?

7.4. Is your enterprise mass-producing or producing a wide variety of products in small quantities?
(1= mass production, 2=diversified low-volume manufacturing) _____

7.4.1 If the answer is 1, do you produce prototypes for your products before mass production?
(1=for each product, 2=for most products, 3=for particular products,
4=sometimes, 5=never) _____

7.5. Do you (or your customers) set product specifications for each product you produce?
(1=Yes 2=No) _____

7.5.1. If yes, how successful are you in producing products that meet the product specifications that you (or your customers) have set for yourself?
(Note: Please choose any value from 0 to 10, where the value 0 means:
'extremely unsuccessful" and the value 10 means: 'extremely successful.) _____

7.6. Do you regularly inspect the first pieces (output) of each production run (batches)?
(1=Yes 2=No) _____

7.6.1. If yes, do you have inspection instructions that lay down the details of the tests to be carried out?
(1=Yes 2=No) _____

7.7. How often do you perform in-process inspection of your products?
(1=daily, 2=weekly, 3=only for new products, 4=occasionally, 5=never) _____

7.7.1. If yes, do you have inspection instructions or manuals that lay down the details of the tests to be carried out? (1=Yes 2=No) _____

7.8. How often do you inspect the quality of your product before shipping them to customers? (1= whenever the product is sold 2= at some pre-specified interval 3=only for particular products, 4=occasionally, 5=never) _____

7.8.1. If yes, do you have inspection instructions or manuals that lay down the details of the tests to be carried out? (1=Yes 2=No) _____

7.9. What do you do to prevent contamination or damage or deterioration of your products when transporting to your customers (to the market)?

7.10. Do you provide any document or certificate for quality assurance or warranty for customers buying your products?
(1=for all products, 2=for most products, 3=for some products since more than a year ago, 4=for some products since a year ago, 5=never) _____

7.10.1 If yes, for how long? (in months) _____

7.11. Does durability affect the popularity of your products?
(1=very strongly, 2=strongly, 3=to some extent, 4=sometimes, 5=never) _____

7.11.1. If yes, how do you grade the durability of your product(s) compared with the durability of the most popular imported goods in the same category?
(1=Much less durable 2=Less durable 3=About the same durability
4= More durable 5=Highly durable) _____

7.12. Does packaging affect the popularity of your products?
(1=very strongly, 2=strongly, 3=to some extent, 4=Sometimes, 5=never) _____

7.12.1 If yes, how do you grade the packaging quality of your product(s) compared with the packaging of the most popular imported goods in the same category?
(1=Much lower quality 2=Lower quality 3=About the same quality
4= Slightly better quality 5=Much better quality) _____

7.13. Do you sometime discover defects on some of your products?
(1=Yes, 2=No) _____

7.13.1 If yes, on average, what is the percentage of products having some defects? (%) _____

7.14. The table below shows possible reasons for the occurrence of quality defects in any manufacturing processes. Which of these incidences can explain product defects in your firm?

Reason for defect	(use code: 1=Very true, 2=probably true, 3=only to some extent 4=unlikely, 5=far from the reality)
1. The shop-floor operators had no clear idea what standard of quality was required	
2. The production process was such that it was very difficult to get the job right, but very easy to get it wrong	
3. The machine and equipment were incapable of achieving the quality level required	
4. The incoming raw materials and components were unsatisfactory	
5. The operators were untrained and not up to the job	
6. Shop-floor quality control was not properly planned	
7. Shop-floor quality control was not properly executed	

8. JICA Training Experiences

To Enumerator: please explain to the respondent that his/her response to these training questions will only be used for research purpose and will not affect the respondent's chances of receiving any potential benefits or being admitted to any future training by JICA or any other institution.

8.1. Have you or anyone in your enterprise participated in any training offered by JICA or any other Japanese institutions (or EDRI)
(i.e., KAIZEN training programs)? (1= yes, 2= no) _____

Enumerator: If no to 8.1., skip to question 8.1.4. If yes, continue to the next question.

8.1.1. If yes, when did you participate? (Year) _____

8.1.2. If yes, what did you learn (Can be multiple: 1= entrepreneurship 2=financial management 3=marketing 4= quality management 5= 5s 6=Muda, Mura and Muri 7=nothing 8=others) _____

8.1.3. Have you talked about the contents of the training with nonparticipants? (1= to many in detail, 2=leaked only limited information but to many, 3=to some in detail, 4=leaked limited information to some, 5= no) _____

8.1.3.1. If yes, did you teach them anything? (1= yes, 2= no) _____

8.1.3. Were you invited by the Ethiopian KAIZEN Institute (EKI) or JICA to participate in a KAIZEN training program? _____
(1=Yes 2=No) ***If No, skip to question 8.2.***

8.1.4. If yes, did you participate in the In-Company Training (ICT)? _____
(1. Yes 2. No)

8.1.5. If Yes, when did you participate in these training programs?
_____Year_____Month (**Skip to question 8.1.8**)

8.1.6. If no to 8.1.5, what is your (your firm's) most important reason for **not participating** in the training programs? _____
(1. The firm's management thought that KAIZEN is not currently useful for the enterprise, 2. No time or space to introduce additional changes in the enterprise 3. The firm was willing but EKI declined to send consultants to the firm, 4. Others (specify) _____
skip to question 8.2.

Enumertor: Ask the following questions if the respondent answered Yes to 8.1.5 ,

8.1.7. Which of the following were ***important*** reasons for your firm's decision to **participate** in the training program?

Reasons for participation	Codes 1. Yes 2. No
1. To learn how to improve product quality	
2. To learn how to reduce cost of production	
3.To learn how to improve delivery time	
4. To learn how to better manage workers	
5. To learn how to better manage inventory	
6. To learn how to better manage supply chain	
7. No particular reason, just could not refuse the invitation by EKI or JICA	
8. Others	

8.1.8. For how many weeks did your firm participate in ICT ? _____ weeks

8.1.9. For how many days in a week did you receive the ICT? _____ days

8.1.10. On average, for how many hours in a day did you receive the ICT? _____ hours

8.1.11. What did you learn (Can be multiple: 1= entrepreneurship 2=financial management 3=marketing 4= quality management 5= 5s 6=Muda, Mura and Muri 7=nothing in particular 8=others) _____

8.1.12. Did you find the training useful for your enterprise? _____
(1. Yes, extremely useful 2. Yes, useful 3. Yes, it was alright 4. No, it was not useful)

8.1.13. Has the firm declared one of the working days as a KAIZEN day?
(1. Yes 2.No) _____

8.2. If the answer is No to 8.1, have you (or your firm) heard the word "KAIZEN" before this interview (i.e., about KAIZEN training programs)?
(1= yes in detail about KAIZEN, 2=yes but mostly about the outline of the program and little about the contents of the training, 3= yes only a little even about the outline, 4=Yes, heard that there were training programs, 5=not at all) _____

8.2.1. If yes to 8.2., when did you hear about the training programs (year) _____

8.2.2. If yes to 8.2, from whom did you hear of this training? (Can be multiple)
(1. from the association, 2. from one of the participants, 3. from EKI
4.from someone else.) _____

8.2.3. If the answer to 8.2.2 is 2, what did you learn from training participants?
(Can be multiple 1= entrepreneurship 2=financial management 3=marketing
4= quality management 5= 5s 6=Muda, Mura and Muri 7= nothing 8=others) _____

9. Other training experience

To Enumerator: This subsection refers to training programs other than those offered by JICA (KAIZEN training programs)

9.1	Has anyone in the enterprise including the owner, general manager or workers received any formal training?	1. Yes 2. No

If the answer to Question 9.1 is no, skip the question. If the answer is yes, let the respondent choose <u>the most representative training</u> and answer the following questions.

9.2	Type of training	1. Production 2. Marketing 3. Finance 4. Quality control 5. Others, specify
9.3	When?	
9.4	How long? (days)	
9.5	Who participated?	1. Only owner 2. Only general manager 3. Workers 4. Others, specify
9.6	Who provided?	1. Government 2. Private company 3. Association 4. Cooperative 5. Donor 6. NGO 7. UNIDO 8. Others, specify
9.7	Training cost (If free, fill in "0")	

To Enumerator: This subsection refers to willingness to pay of the respondent for future training programs.

<u>Enumerator: Read the following introduction and ask the questions</u>

IN-Company Training for quality and productivity improvement (KAIZEN)

- A KAIZEN consultant provides tailor-made solutions for your management problems
- A KAIZEN consultant provides ICT for 3 hours a day one day per week for five months
- diagnosis of your business by experienced KAIZEN consultants and industry experts through
  - ✓ Observation of your production process
  - ✓ Quality inspection of your products
  - ✓ Discussion with you and your workers

WTP1. Given your experience or reputation you have heard as well as enumerator's explanation, do you want to participate in the on-site consulting at your enterprise at the price of 4320 Birr, assuming that you have never attended a similar Kaizen training?
1. Yes 2. No (go to the next section) _____

WTP1-1. (If Yes in WTP1) I ask the question again. By paying 4320 Birr, are you really sure to participate?
(1. Definitely sure. 2. Probably sure) _____

10. Management Practices

Enumerator: Please note that the term "You" in this section also refers to the firm; i.e., You =Your firm.

10.1. Do you have a reward system for non-managerial staff based on performance? _____
(1=yes, 2=No)

10.2. Do you have a reward system for managerial staff based on performance? _____
(1=yes, 2=No)

10.3. Do you publicly identify top performers among staff? _____
(1=yes, 2=No)

10.3.1. If yes, how frequently do you publicly identify such types of workers
(1=each week 2= fortnightly 3=each month 4=quarterly 5=biannually
6= annually 7=Others (specify)) _____

10.4. Do you analyze historical data (information compiled in the past) for business decisions? _____
(1=yes, 2=No)

10.5. How do you mainly recruit supervisors or low to middle level managers? _____
(1=By promoting workers internally, 2= By attracting qualified outsiders, 3=others (specify)) _____

10.6. Has this establishment ever hired an external consultant to help improve an area of its management? _____
(1=Yes, 2=No)

10.6.1. If yes to 10.6, were any of these external consultants hired from international consulting firms? _____
(1=Yes, 2=No)

10.7. Which of the following best corresponds to this establishment's main policy when dealing with employees who do not meet expectations in their position? _____
(1= They are rarely or never moved from their position. 2= They usually stay in their position for at least a year before action is taken. 3= They are rapidly helped and re-trained, and then dismissed if their performance does not improve. 4= Their immediately fired without training 6. We don't have a standard procedure to deal with such employees 7= Others (Specfiy) _____

10.8. Currently, what percentage of this establishment's employees regularly use personal computers in their jobs? _____
(% of workers)

10.9. How well managed do you think the establishment is with respect to **people management** (promotions, rewards, hiring people, etc.) on a scale from 1 to 5, where 1 is the worst practice, 5 is the best practice and 3 is the average? _____

10.10. How well managed do you think the establishment is with respect to **operations management** (processes, production, etc.) on a scale from 1 to 5, where 1 is the worst practice, 5 is the best practice and 3 is the average? _____

10.11. How well managed do you think the rest of the establishment is **overall** on a scale from 1 to 5, where 1 is the worst practice, 5 is the best practice and 3 is the average? _____

10.12. Does the firm have quality control circles?
(1= Yes 2=No) _____

10.13. Does the firm implement standardize-do-check-act (SDCA) cycle?
(1.Yes 2.No) _____

10.14. Does the firm implement plan-do-check-act (PDCA) cycle?
(1.Yes 2.No**)** _____

10.15. Does the firm have an internationally recognized quality certification for its main production (e.g. ISO 9000, ISO 14000 etc.)? _____
[1 = Yes, 2 = No]

10.15.1. When did you obtain this certificate? _____ Year

11. Entrepreneur's view of organizational culture

The following questions are about your personal way of thinking. Here, "You" **does not** mean "Your firm" but yourself.

11.1 How did you think about your workplace before 2004? Your workplace was _____

1. A very personal place
2. A very dynamic entrepreneurial place
3. A very result-oriented place
4. A very controlled and structured place

11.2 How do you think about your workplace now? Your workplace is _____

1. A very personal place
2. A very dynamic entrepreneurial place
3. A very result-oriented place
4. A very controlled and structured place

11.3 What was your management style before 2004?

1. Teamwork, consensus, and participation
2. Individual risk-taking, innovation, freedom, and uniqueness.
3. Competitiveness, high demands, and achievement
4. Security of employment, conformity, predictability, and stability

11.4 What is your management style now?

1. Teamwork, consensus, and participation
2. Individual risk-taking, innovation, freedom, and uniqueness.
3. Competitiveness, high demands, and achievement
4. Security of employment, conformity, predictability, and stability

11.5 What brought your enterprise together before 2004?

1. Loyalty and mutual trust
2. Commitment to innovation and development
3. Emphasis on achievement and goal accomplishment
4. Formal rules and policies

11.6 What brings your enterprise together now?

1. Loyalty and mutual trust
2. Commitment to innovation and development
3. Emphasis on achievement and goal accomplishment
4. Formal rules and policies

Impact Survey

Project on Capacity Building for Dissemination

of Quality and Productivity Improvement (KAIZEN)

QUESTIONNAIRE for MSE follow up

Questionnaire ID _____ Partcipant (1. Yes 2. No)_____

<Objective of the Survey>

This survey is a joint research between the Ethiopian Development Research Institute (EDRI) and the Project on Capacity Building for Dissemination of Quality and Productivity Improvement (KAIZEN) conducted by Japan International Cooperation Agency (JICA) and Ethiopian KAIZEN Institute (EKI). This survey forms part of the research study for enhancing enterprise productivity and quality of products in the Ethiopian manufacturing sector through various capacity building mechanisms including classroom and in-company KAIZEN training for selected enterprises. We promise that any information collected through the interviews will be used exclusively for the research purpose.

<Enumerator>

Before proceeding to the survey questions, please make sure that you have explained the objective of the survey clearly to the respondent. The respondent should also be convinced that the information obtained is private, and EDRI would not reveal the respondent's name, enterprise name, or any other identifying information to a third party.

Note: a) Use Ethiopian Calendar (EC) year for all related questions in this questionnaire.
b) Check (✓) on the appropriate number for the multiple-choice questions.
c) Use the following codes: - 77 for "Not applicable"
- 88 for "Do not know"
- 99 for "Refusal"

	Name	Completed date	Comments	Signature
Enumerator				
Supervisor				
Data verifier				

1. Date of Survey

1.1	Day		1.2	Month		1.3	Year	

2. Respondent Information

To Enumerator: Please understand that the respondent should be the same person who was interviewed for the baseline survey. If this person is not available, please ask for the owner or general manager or equivalent at the top decision maker of the enterprise. If you cannot interview the general manager, please get an appointment to speak with him at some later date.

2.1	Name		
	2.1.1	Enumerator: Respondent is the same person that was interviewed for the baseline survey?	1. Yes 2. No

2.2	Position	1. Owner and GM (or equivalent) 2. GM (or equivalent) but not owner 3. Vice manager 4. Production manager 5. Child of owner 6. Others, specify _____
2.3	Tel	
2.4	Age	
2.5	Sex (1=Male 2=Female)	
2.6	Highest level of education	1. No formal schooling 2. Primary school 3. High school 4. Vocational school 5. University/college
2.7	Years of schooling	
2.8	Do you have prior experience working in the manufacturing sector	1. Yes 2. No
	2.8.1. If yes, for how many years?	
	2.8.2. If yes to 2.8, in which of the following sectors?	1. Agro-processing 2. Chemical 3. Leather & footwear 4. Metal 5. Textile & Garment 6. Others
2.11.	Do you have prior trading experience?	1. Yes, as a retailer 2. Yes, as a wholesaler 3. Yes, salesperson, sales or purchasing manager 4. Yes others 5. No
	2.11.1. If yes, for how many years?	
2.12	Do you have prior management experience?	1. Yes, top-level 2. Yes, middle-level 3. Yes, low-level 4. No
	2.12.1. If yes, for how many years?	
2.13	Years of management experience (at the current enterprise)	

3. Enterprise General Information

3.1	Enterprise name		
3.2	ID code		
3.3	Enterprise tel number	Fixed line:	Mobile:
3.4	E-mail		
3.5.	Website		
3.6	Sub-city		
3.7	Woreda		
3.8	Local name		
3.9	House no.		
3.10	Description of how to get to the enterprise		
	3.10.1. Number of sign boards in the vicinity of the enterprise		
3.11	Year of establishment		

3.12	Sub-sector	1. Food-processing 2. Precast 3. Leather & footwear 4. Wood and metalwork 5. Textile & Garment 6. Construction 7. Others, specify_____		
3.13	Main product			
3.14	Second main product			
3.15	Third main product			
3.16	Type of sales channel (%)			
	3.16.1. Direct sales to users using own retail store		3.16.3. wholesalers	
	3.16.2. Other retail stores		3.16.4. Direct exporting	
3.17	Number of workshops			
3.18	Enterprise current ownership	1. Domestic private 2. State owned 3. Foreign owned 4. Joint venture 5. Cooperative 6. Others, specify _____		
3.19	Is the enterprise registered for VAT?	1=Yes 2=No	3.20. Does the enterprise have TIN?	1=Yes 2=No

4. Business Performance: Employment (as of the time of data collection)

To Enumerator: Number of persons engaged should include the General Manager and other managers as well as supervisors, foremen and quality control personnel.

4.1	Number of persons engaged (permanent and temporary)	
	How many of these are	***Enumerator: Be sure that the sum of the first three and the last two each should be equal to the total number of persons engaged***
	4.1.1. Paid workers	
	4.1.2. Unpaid family workers	
	4.1.3. Apprentices and likes	
	4.1.4. Male	
	4.1.5. Female	
4.2	Total number of production workers	
	How many of these are	***Enumerator: Be sure that the sum of 4.2.1 and 4.2.2 should be equal to 4.2***
	4.2.1. Permanent	
	4.2.2. Temporary	
4.3	Total number of supervisors, foremen and quality control personnel	
4.4.	Total number of managers including low level managers	
4.5	Number of marketing workers (permanent and temporary)	
4.6	Main payment arrangement of production workers	1. Piece rate 2. Daily basis 3. Weekly basis 4. Fortnight basis 5. Monthly basis 6. Others, specify _____

5. Business Performance: Sales and Cost
[Please note that this is the Micro and Small Enterprise Questionnaire)

To Enumerator: When filling in this section, please make sure that you do not omit or add more zeros than the respondents answer. Note that the figures correspond to the months of September and October, 2013, and April 2014.

		September, 2013 (Meskerem, 2006)	October, 2013 (Tikmet, 2006)	April, 2014 (Miyaziya 2006)
		(a)	**(b)**	**(c)**
5.1	Total sales revenue			
	5.1.1. Percentage of export revenue (%)			
	5.1.2. Percentage of revenue from local market (%) (Sum of the answers to 5.1.1 and 5.1.2 should be equal to 100.)			
5.2	Total sales revenue by the main product			
5.3	Revenue from renting out machines & equipment			
5.4	Revenue from technical services			
5.5	Total cost of raw material & intermediate goods			
5.6	Total cost of labor (incl. wages, bonus, social benefits)			
5.7	Electricity/telephone/water cost			
5.8	Transport cost			
5.9	Payment to sub-contractors			
5.10	Rental cost (building, equipment, machinery)			
5.11	Marketing fee (advertisement, commission and agent)			
5.12	Consultants/technical advisors fee			
5.13	Remuneration to foreign engineers/technicians/advisors/consultants			
5.14	Interest payment/bank charge			
5.15	Amortization (repayment of loan)			

5.16. What is the enterprise's current capacity utilization rate? (%) _____

5.17. What is the total replacement value of the enterprise's machinery and equipment? _____

5.18. What was your total **monthly sales revenue** during peak business periods in 2005 and 2006 EC?
In the year 2005 EC? _____ In the year 2006 EC? _____

5.19. What was your total **monthly sales revenue** during slack business periods in 2005 and 2006 EC?
In the year 2005 EC? _____ In the year 2006 EC? _____

5.20. What was the total income the business earned during the month of **Tikmet, 2006**, after paying all expenses including the wages of employees, but not including any income you paid yourself. That is, what were the profits of your business during **Tikmet, 2006?** _____

6. Business Performance: Production Quality

6.1	Do you store raw materials in designated areas?	1. Yes, for all raw materials 2. Yes, only for certain types of raw materials (e.g, heavy or valuable) 3. No
6.2	Do you store raw materials that have not been used for a year or more?	1. Yes 2. No
6.3	Do you demarcate between corridors and work areas?	1. Yes 2. Yes, moderately 3. No
6.4	Do you place items that are not used frequently in your work area?	1. Yes 2. Yes, moderately 3. No
6.5	Do you clean your workshop after work?	1. Yes, everyday 2. Yes, once a week 3. Yes, once a month 4. Sometimes when needed 5. No
6.6	Do you store cleaning implements in designated places inside work areas?	1. Yes 2. Yes, moderately 3. No
6.7	Do you put the same raw materials and components in one space?	1. Yes 2. Yes, moderately 3. No
6.8	Do you put tool, jig and die in fixed place?	1. Yes 2. Yes, moderately 3. No
6.9	After working, do you clean and check machine and equipment every day?	1. Yes 2. Yes, moderately 3. No
6.10	Do you store products that were manufactured one month or more ago?	1. Yes 2. No
6.11	Do you store parts and work in progress that were processed one month or more ago separately?	1. Yes 2. No
6.12	Is there any store of work in progress between processes?	1. Yes 2. No
6.13	Do you know the average duration of each production activity?	1. Yes, I have measured 2. Yes, I can estimate 3. No
6.14	Do you arrange machines in line with the flow of work?	1. Yes, regularly 2. Yes, occasionally 3. No
6.15	Do you keep machines close to each other?	1. Yes 2. Yes, moderately 3. No
6.16	Which do you prioritize?	1. Meeting customer demands quickly or 2. Reducing material costs by mass production
6.17	Is there situation where certain processes are overworked and other processes are idle?	1. Yes, regularly 2. Yes, occasionally 3. No
6.18	During machine operation, do operators perform other tasks in addition to monitoring the machines?	1. Yes 2. Yes, moderately 3. No

6.19	Can you perform machine settings during work changeovers in 5 minutes or less?	1. Yes 2. No, because there is no work changeover 3. No
6.20	Can you estimate the necessary work time accurately according to the work volume?	1. Yes 2. Yes, moderately 3. No
6.21	Do you encourage workers to be multi-skilled?	1. Yes 2. Yes, moderately 3. No
6.22	Is the difference in productivity among same operation workers less than 30 percent?	1.Yes, I have measured 2. Yes, I can estimate 3. No, it is more than 30 percent 4. I don't know
6.23	Do you face machines break or any other impediments to the process control?	1. Yes, regularly 2. Yes, occasionally 3. No
6.24	Do you know the costs of production for each of your products?	1. Yes, I have measured 2. Yes, I can estimate 3. No
6.25	Is standardizing each work procedure important?	1. Yes 2. Yes, moderately 3. No 4. Don't know
6.26	How often do you change the layout of your production processes?	1. Frequently 2. Occasionally 3. Never
6.27	If the answer to 6.26 is 1 or 2, why did you change your layout?	1. Higher product demand 2. Higher costs of production 3. New production site 4. Others (Specify) _____

7. Product Quality

7.1. Do you sample raw materials before procurement from new suppliers?
(1=always yes, 2=for most materials, 3=for particular materials or suppliers,
4=occasionally or casually, 5=never) _____

7.2. Have you established quality requirements (or buying specifications) for raw materials procurement?
(1=always yes, 2=for most materials, 3=for particular materials or suppliers,
4=occasionally or casually, 5=never) _____

7.3. How often do you check the quality of raw materials before acceptance into your stores?
(1=whenever materials arrive, 2=for most materials,
3=for particular materials or suppliers, 4=occasionally or casually, 5=never) _____

7.3.1. Once in storage, how do you prevent contamination or damage or deterioration of your raw materials?

7.4. Is your enterprise mass-producing or producing a wide variety of products in small quantities? (1= mass production, 2=diversified low-volume manufacturing) _____

7.4.1 If the answer is 1, do you produce prototypes for your products before mass production? (1=for each product, 2=for most products, 3=for particular products, 4=sometimes, 5=never) _____

7.5. Do you (or your customers) set product specifications for each product you produce? (1=Yes 2=No) _____

7.5.1. If yes, how successful are you in producing products that meet the product specifications that you (or your customers) have set for yourself? (Note: Please choose any value from 0 to 10, where the value 0 means: 'extremely unsuccessful" and the value 10 means: 'extremely successful.) _____

7.6. Do you regularly inspect the first pieces (output) of each production run (batches)? (1=Yes 2=No) _____

7.6.1. If yes, do you have inspection instructions that lay down the details of the tests to be carried out? (1=Yes 2=No) _____

7.7. How often do you perform in-process inspection of your products? (1=daily, 2=weekly, 3=only for new products, 4=occasionally, 5=never) _____

7.7.1. If yes, do you have inspection instructions or manuals that lay down the details of the tests to be carried out? (1=Yes 2=No) _____

7.8. How often do you inspect the quality of your product before shipping them to customers? (1= whenever the product is sold 2= at some pre-specified interval 3=only for particular products, 4=occasionally, 5=never) _____

7.8.1. If yes, do you have inspection instructions or manuals that lay down the details of the tests to be carried out? (1=Yes 2=No) _____

7.9. What do you do to prevent contamination or damage or deterioration of your products when transporting to your customers (to the market)?

7.10. Do you provide any document or certificate for quality assurance or warranty for customers buying your products? (1=for all products, 2=for most products, 3=for some products since more than a year ago, 4=for some products since a year ago, 5=never) _____

7.10.1 If yes, for how long? (in months) _____

7.11. Does durability affect the popularity of your products? (1=very strongly, 2=strongly, 3=to some extent, 4=sometimes, 5=never) _____

7.11.1. If yes, how do you grade the durability of your product(s) compared with the durability of the most popular imported goods in the same category? (1=Much less durable 2=Less durable 3=About the same durability 4= More durable 5=Highly durable) _____

7.12. Does packaging affect the popularity of your products?
(1=very strongly, 2=strongly, 3=to some extent, 4=Sometimes, 5=never) _____

7.12.1 If yes, how do you grade the packaging quality of your product(s) compared with the packaging of the most popular imported goods in the same category?
(1=Much lower quality 2=Lower quality 3=About the same quality
4= Slightly better quality 5=Much better quality) _____

7.13. Do you sometime discover defects on some of your products?
(1=Yes, 2=No) _____

7.13.1 If yes, on average, what is the percentage of products having some defects? (%) _____

7.14. The table below shows possible reasons for the occurrence of quality defects in any manufacturing processes. Which of these incidences can explain product defects in your firm?

Reason for defect	(use code: 1=Very true, 2=probably true, 3=only to some extent 4=unlikely, 5=far from the reality)
1. The shop-floor operators had no clear idea what standard of quality was required	
2. The production process was such that it was very difficult to get the job right, but very easy to get it wrong	
3. The machine and equipment were incapable of achieving the quality level required	
4. The incoming raw materials and components were unsatisfactory	
5. The operators were untrained and not up to the job	
6. Shop-floor quality control was not properly planned	
7. Shop-floor quality control was not properly executed	

8. JICA Training Experiences

To Enumerator: please explain to the respondent that his/her response to these training questions will only be used for research purpose and will not affect the respondent's chances of receiving any potential benefits or being admitted to any future training by JICA or any other institution.

8.1. Have you or anyone in your enterprise participated in any training offered by JICA or any other Japanese institutions (or EDRI)
(i.e., KAIZEN training programs)? (1= yes, 2= no) _____

Enumerator: If no to 8.1., skip to question 8.2. If yes, continue to the next question.

8.1.1. If yes, when did you participate? (Year) _____

8.1.2. If yes, what did you learn (Can be multiple: 1= entrepreneurship 2=financial management 3=marketing 4= quality management 5= 5s 6=Muda, Mura and Muri 7=nothing 8=others) _____

8.1.3. Have you talked about the contents of the training with nonparticipants? (1= to many in detail, 2=leaked only limited information but to many, 3=to some in detail, 4=leaked limited information to some, 5= no) _____

8.1.3.1. If yes, did you teach them anything? (1= yes, 2= no) _____

8.1.3. Were you invited by the Ethiopian KAIZEN Institute (EKI) or JICA to participate in a KAIZEN training program? _____
(1=Yes 2=No) ***If No, skip to question 8.2.***

8.1.4. If yes, did you participate in the In-Company Training (ICT)? _____
(1. Yes 2. No)

8.1.5. If Yes, when did you participate in these training programs?
_____Year_____Month

8.1.6. If no to 8.1.5, what is your (your firm's) most important reason for **not participating** in the training programs? _____
(1. The firm's management thought that KAIZEN is not currently useful for the enterprise, 2. No time or space to introduce additional changes in the enterprise 3. The firm was willing but EKI declined to send consultants to the firm, 4. Others (specify) _____
skip to question 8.2.

Enumertor: Ask the following questions if the respondent answered Yes to to either 8.1.5 or 8.1.6,

8.1.7. Which of the following were ***important*** reasons for your firm's decision to **participate** in the training program?

Reasons for participation	Codes 1. Yes 2. No
1. To learn how to improve product quality	
2. To learn how to reduce cost of production	
3.To learn how to improve delivery time	
4. To learn how to better manage workers	
5. To learn how to better manage inventory	
6. To learn how to better manage supply chain	
7. No particular reason, just could not refuse the invitation by EKI or JICA	
8. Others	

8.1.8. For how many weeks did your firm participate in ICT ? _____ weeks

8.1.9. For how many days in a week did you receive the ICT training? _____ days

8.1.10. On average, for how many hours in a day did you receive the ICT? _____ hours

8.1.11. What did you learn (Can be multiple: 1= entrepreneurship 2=financial management 3=marketing 4= quality management 5= 5s 6=Muda, Mura and Muri 7=nothing in particular 8=others) _____

8.1.12. Did you find the training useful for your enterprise? _____
(1. Yes, extremely useful 2. Yes, useful 3. Yes, it was alright 4. No, it was not useful)

8.1.13. Has the firm declared one of the working days as a KAIZEN day?
(1. Yes 2.No) _____

8.2. If the answer is No to 8.1, have you (or your firm) heard the word "KAIZEN" before this interview (i.e., about KAIZEN training programs)?
(1= yes in detail about KAIZEN, 2=yes but mostly about the outline of the program and little about the contents of the training, 3= yes only a little even about the outline, 4=Yes, heard that there were training programs, 5=not at all) _____

8.2.1. If yes to 8.2., when did you hear about the training programs (year) _____

8.2.2. If yes to 8.2, from whom did you hear of this training? (Can be multiple)
(1. from the association, 2. from one of the participants, 3. from EKI
4.from someone else.) _____

8.2.3. If the answer to 8.2.2 is 2, what did you learn from training participants?
(Can be multiple 1= entrepreneurship 2=financial management 3=marketing
4= quality management 5= 5s 6=Muda, Mura and Muri 7= nothing, 8=others) _____

Enumertor: Ask the following questions to everyone.

8.3. Does the firm have quality control circles?
(1.Yes 2.No) _____

8.4. Does the firm implement standardize-do-check-act (SDCA) cycle?
(1.Yes 2.No) _____

8.5. Does the firm implement plan-do-check-act (PDCA) cycle?
(1.Yes 2.No) _____

8.6. Does the firm analyze historical data (information compiled in the past) for business decisions? _____
(1=yes, 2=No)

8.7. Does the firm have an internationally recognized quality certification for its main production (e.g. ISO 9000, ISO 14000 etc.)? _____
[1 = Yes, 2 = No]

8.7.1. When did you obtain this certificate? _____ Year

9. Other training experience

To Enumerator: This subsection refers to training programs other than those offered by JICA (KAIZEN training programs)

9.1	Has anyone in the enterprise including the owner, general manager or workers received any formal training?	1. Yes 2. No

If the answer to Question 9.1 is no, skip the question. If the answer is yes, let the respondent choose the most representative training and answer the following questions.

9.2	Type of training	1. Production 2. Marketing 3. Finance 4. Quality control 5. Others, specify
9.3	When?	
9.4	How long? (days)	
9.5	Who participated?	1. Only owner 2. Only general manager 3. Workers 4. Others, specify
9.6	Who provided?	1. Government 2. Private company 3. Association 4. Cooperative 5. Donor 6. NGO 7. UNIDO 8. Others, specify
9.7	Training cost (If free, fill in “0”)	

To Enumerator: This subsection refers to willingness to pay of the respondent for future training programs.

Enumerator: Read the following introduction and ask the questions

IN-Company Training for quality and productivity improvement (KAIZEN)
- A KAIZEN consultant provides tailor-made solutions for your management problems
- A KAIZEN consultant provides ICT for 3 hours a day one day per week for five months
- diagnosis of your business by experienced KAIZEN consultants and industry experts through
  - ✓ Observation of your production process
  - ✓ Quality inspection of your products
  - ✓ Discussion with you and your workers

WTP1. Given your experience or reputation you have heard as well as enumerator's explanation, do you want to participate in the on-site consulting at your enterprise at the price of 4320 Birr, assuming that you have never attended a similar Kaizen training?
1. Yes 2. No (If no go to the next section) _____

WTP1-1. (If Yes in WTP1) I ask the question again. By paying 4320 Birr, are you really sure to participate?
(1. Definitely sure. 2. Probably sure) _____

10. Entrepreneur's view of organizational culture

The following questions are about your personal way of thinking. Here, "You" **does not** mean "Your firm" but yourself.

10.1 How did you think about your workplace before 2012? Your workplace was _____

1. A very personal place
2. A very dynamic entrepreneurial place
3. A very result-oriented place
4. A very controlled and structured place

10.2 How do you think about your workplace now? Your workplace is _____

1. A very personal place
2. A very dynamic entrepreneurial place
3. A very result-oriented place
4. A very controlled and structured place

10.3 What was your management style before 2012?

1. Teamwork, consensus, and participation
2. Individual risk-taking, innovation, freedom, and uniqueness.
3. Competitiveness, high demands, and achievement
4. Security of employment, conformity, predictability, and stability

10.4 What is your management style now?

1. Teamwork, consensus, and participation
2. Individual risk-taking, innovation, freedom, and uniqueness.
3. Competitiveness, high demands, and achievement
4. Security of employment, conformity, predictability, and stability
5. Not applicable

10.5 What brought your enterprise together before 2012?

1. Loyalty and mutual trust

2. Commitment to innovation and development
3. Emphasis on achievement and goal accomplishment
4. Formal rules and policies

10.6 What brings your enterprise together now?

1. Loyalty and mutual trust
2. Commitment to innovation and development
3. Emphasis on achievement and goal accomplishment
4. Formal rules and policies

Appendix 11: Final Report for the Impact Survey

Learning to be efficient: The Effect of Kaizen in-Company Training on workplace practices and enterprise performance

A preliminary evaluation report on the “Project on Capacity Building for Dissemination of Quality and Productivity Improvement (KAIZEN)”

October, 2014

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This report is in partial fulfillment of the agreement between the Ethiopian Development Research Institute and the Japan Development Services (JDS) to analyze the effectiveness of KAIZEN In-Company training. The inquiry in this report is based on several rounds of baseline and follow-up data generated from both large and medium and micro and small enterprises active in the manufacturing sector. Between the baseline and follow-up surveys, there were KAIZEN in-Company training offered to a selected group of enterprises. Findings reported in this paper are based on the surveys and the evaluation of the effectiveness of the training program. Of course, the views expressed in this report are of the authors and do not necessarily reflect the positions of EDRI or JDS.

ABSTRACT

Recently the governments of Ethiopia and Japan have designed a project aimed at introducing KAIZEN knowledge to selected group of Large and medium as well as micro and small enterprises operational in the manufacturing sector. This paper evaluates the effectiveness of KAIZEN intervention in the context of manufacturing enterprises in Ethiopia. The study is based on several rounds of primary baseline data collected before a selected group of companies were offered In-Company Training and a follow-up data, which was collected afterwards. Analysis of the data suggests that given the opportunity, entrepreneurs are willing to experiment with new knowledge, such as KAIZEN, and that KAIZEN is effective in changing the way both LMEs and MSEs are operated. More precisely, enterprises that were offered ICT rarely refused to attended the training, and participation is strongly correlated with improvements in the manner with which workplace is run. The paper finds that ICT participants had larger scores in a wide range of workplace 5S (housekeeping) practices and that they experienced significant reductions in non-value adding activities or wasteful practices. These changes at the workplace level appear to have significantly improved value addition, profitability and productivity of participating enterprises.

TABLE OF CONTENTS

1. Introduction 1
2. Conceptual Framework 3
3. 5s and *Muda* Elimination 5
4. Nature and Contents of In-Company Training 6
5. Sampling and Selection 7
6. Baseline Characteristics of Enterprises 8
   - 6.1 Large and Medium Enterprises (LMEs) 8
     - 6.1.1 Human Capital Characteristics 11
     - 6.1.2 Enterprise Characteristics and Marketing Channels 12
     - 6.1.3 Management Practices and Product Quality Indicators 13
     - 6.1.4 Employment and Accounting-based Measures of Performance by Sector 16
   - 6.2 Micro and Small Enterprises (MSEs) 20
     - 6.2.1 Human Capital Characteristics 22
     - 6.2.2 Enterprise Characteristics and Marketing Channels 24
     - 6.2.3 Management Practices and Product Quality Indicators 25
     - 6.2.4 Employment and Accounting-based Measures of Performance by Sector 26
7. Empirical Strategy 29
8. The Effect of ICT on Business Practices and Enterprise Performance 33
   - 8.1 ICT in Large and Medium Enterprises 33
     - 8.1.1 Descriptive Findings 33
     - 8.1.2 Matching and Econometric Results 38
       - 8.1.2.1 Participation and Selection 38
       - 8.1.2.2 5S (housekeeping) and Business Practices 39
       - 8.1.2.3 Business Performance 43
   - 8.2 ICT in Micro and Small Enterprises 46
     - 8.2.1 Descriptive Data 46
     - 8.2.2 Participation and Selection 51
     - 8.2.3 *** p<0.01, ** p<0.05, * p<0.15S (Housekeeping) and Business Practices 53
     - 8.2.4 Business Performance 55
9 Summary 58

Annex 61
- Annex 1. Criteria for Selecting Enterprises to Participate in Training 61
- Annex 2. Size classification of enterprises 61
- Annex 3. Questions employed to capture social attitude, risk and time preferences in both the LMEs and MSEs survey 62
- Annex 4. Questions employed to solicit 5S, housekeeping and business practices of LMEs and MSEs. 63

References 64

LIST OF FIGURES

Figure 1 Sector-wise distribution of sample LMEs.....9
Figure 2 Size distribution of LMEs by sector 10
Figure 3 Value added and gross profit by sector in 2010/11 and 2011/12.....18
Figure 4 Measures of productivity by sector in 2011/12.....19
Figure 5 Relative profitability measures and capacity utilization by sector.....19
Figure 6 Sector-wise distribution of sample MSEs.....20
Figure 7 Size distribution of MSEs by sector.....21
Figure 8 Value added and profit by sector 28
Figure 9 Labor productivity, capital productivity, capital labor ratio and number of workers by sector.....28
Figure 10 Relative profitability measures and capacity utilization by sector.....29
Figure 11 Baseline difference, trajectories and treatment effects 30
Figure 12 Confidence interval plots of 5S, housekeeping and business practice scores before and after training by participation status.....42
Figure 13 Confidence interval plots of basic business outcome indicators before and after training by participation status.....46
Figure 14 Confidence interval plots of housekeeping and business practice scores before and after training by participation status.....54
Figure 15 Confidence interval plots of basic business outcome indicators before and after training by participation status.....57

LIST OF TABLES

Table 1 Human capital characteristics of general manager by sector 11
Table 2 Enterprise characteristics by sector 12
Table 3 Marketing channel for firm's products by sector 13
Table 4 Management practices, quality measures and level of defective products by sector 15
Table 5 Employment characteristics of enterprises by sector 16
Table 6 Accounting-based measures of performance across sectors in 2010/11 and 2011/12. 17
Table 7 Human capital characteristics of owner-managers by sector 23
Table 8 MSE characteristics by sector 24
Table 9 Management practices, quality measures and level of defective products by sector 25
Table 10 Employment characteristics of enterprises by sector 26
Table 11 Monthly sales revenue, major costs articles and total capital stock by sector in thousands of birr. 27
Table 12 Human Capital Characteristics of enterprise operators 33
Table 13 Enterprise Characteristics by participation status 35
Table 14 Management practices and quality measures 37
Table 15 Accounting-based measures of performance. 37
Table 16 Model of participation 38
Table 17 The effect of ICT on 5S, housekeeping and business practice indicators 41
Table 18 Panel data regression and matching estimates along with simple DID results on enterprise performance indicators 45
Table 19 Human capital characteristics of enterprise operators 47
Table 20 Enterprise characteristics by participation status 48
Table 21 Business practice and quality measures by participation status 50
Table 22 Accounting based measure of performance 50
Table 23 Probit model of ICT participation 52
Table 24 Panel data regression and matching estimates along with simple DID results on 5S, housekeeping and business practice indictors. 53
Table 25 Panel data regression and matching estimates along with simple DID results on enterprise performance indicators. 56

1. Introduction

Ethiopia has enjoyed a sustained remarkable economic growth since 2002/2003. Yet the economic structure remains heavily dominated by the agricultural sector and growth in non-farm sector has been particularly slow. The contribution of industry (manufacturing) to GDP at 12.4 % (4%) and to urban employment at 20% (less than 6%)[1]and to annual GDP growth 2.1 percentage point in 2012/13 (0.4 percentage points) is low even by the standard of low income economies in the sub-continent (Dinh et al., 2012). Moreover, the pattern of growth in Ethiopia clearly shows that growth has been largely driven by expansion in the service sector in the last 15 years contributing 45.2% to GDP and 43.8% to urban employment in 2012/13.

Service-led growth path, however, may not be conducive for economies that are endowed with disproportionately large numbers of unskilled and semi-skilled workers with predominately agrarian economic structure. Service sector, for example, tends to be highly bipolar in firm distribution populated with many micro and small firms active in petty trading and food vending along with few large firms, mainly in the financial and insurance businesses. While the former are commonly good sources of employment for unskilled and semi-skilled workers, they often offer jobs that perpetuate low productivity and low wage. The latter, on the other hand, have limited labor absorptive capacity by their very nature and innovations in such types of firms tend to be more skill than labor intensive (e.g., Sonobe et al., 2011)[2].

There is strong evidence that suggests that the structural transformation of the economy and the society without strong industrial base in general and manufacturing sector in particular is unlikely (McMillan and Rodrik, 2011; Lin,2011). Manufacturing creates alternative opportunities for those employed in the agricultural and low-productive service sector as well as for new entrants to the labor market including those at the very bottom end of the education distribution. Rodrik (2013), for example, finds labor productivity tends to converge unconditionally in the manufacturing industries across countries, which further reinforces the argument for expanding the manufacturing sector.

These benefits are long recognized by policy makers in Ethiopia. In a drive to attract investment, the government has accorded the sector a priority status by availing several incentives, ranging from cheap access to land and finance to expedited customs clearance processes. Along with improving business climate factors, such as macroeconomic prudence, trade in logistics and access to inputs, the government has been keen to help build the internal capabilities of manufacturing enterprises.

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1 A survey by Central Statistical Agency in June 2013 puts the joint contribution of manufacturing, mining, quarrying and construction sectors to urban employment at 6.9% (CSA, 2013)

2 Rodrik (2013), for example, argues that "traditionally economies grow and develop first by industrialization, and then by moving into services". In another article, Rodrik also argue that the struggle between labor and capital in factory settings is one of the essential elements for the development of democratic ethos in many of the developed countries.

The introduction of KAIZEN, a Japanese management philosophy, to Ethiopian producers is one of the major interventions that were aimed at boosting product quality and productivity of enterprises. In line with this, the government of Ethiopia in collaboration with the Japan International Cooperation Agency (JICA) formalized KAIZEN by setting up the Ethiopian KAIZEN Institute (EKI) in October, 2011. Subsequently, EKI started providing in-house training to its young employees. JICA and EKI in collaboration with a private KAIZEN consulting firm, Japanese Development Services (JDS), set up a project on "Capacity Building for Dissemination of Quality and Productivity Improvement, KAIZEN". A major component of this project was to provide in-Company Training (ICT) to selected large and medium as well as micro and small firms as the first large scale attempt to disseminate KAIZEN knowledge in the manufacturing sector. The purpose of this paper is to evaluate the effectiveness of these training programs.

This paper relies on several waves of baseline firm data collected before the on-site KAIZEN training and after the training in a span of two years. The training was offered for both Large and Medium Enterprises (LMEs) and Micro and Small Enterprises (MSEs) in several rounds. The aim of the training was to introduce KAIZEN philosophy and practical tools to entrepreneurs who otherwise had limited access to modern management practices.

47 LMEs participated in the ICT in four separate rounds of training. In each round, each enterprise attended the training three hours a day, one day per week for about five months in total. On the other hand, a total of 44 MSEs attended the ICT in three batches for about three hours a day, one day per week for two months. In addition, 13 MSEs received the training from TVETs instructors that operated outside of the EKI-run training program. Since the nature of the training was fairly similar, we aggregate both training program into one.

Three major findings are reported in the paper: (1) both LME and MSE enterprises that received ICT adopted KAIZEN practices quickly, (2) adopting KAIZEN practices led to significant improvements in 5S (housekeeping) and waste elimination practices, (3) as the result of ICT, participants seem to have greater value addition, profitability and improvements in labor productivity. These findings lend further support to the notion that while the initial cost of absorbing and applying KAIZEN practices is not large, its resulting benefit in terms of gains in business practice improvements, productivity, profitability and size is significant both statistically and magnitude-wise.

This paper is organized in the following manner. Section 2 presents the conceptual framework followed by detailed discussion of principles of 5S and waste (*Muda*) elimination in section 3. The nature of ICT and its contents are briefly summarized in section 4. Section 5 presents the sampling protocol and the approaches adopted by the program implementing agency, EKI, in selecting enterprises into the training program. Baseline characteristics of both LMEs and MSEs are presented in detail in section 6. The empirical strategy adopted to perform the analysis is discussed in section 7

followed by the evaluation of the effect of ICT on business practices and enterprise performance of LMEs and MSEs respectively in section 8. Section 9 summarizes and concludes the paper.

2. Conceptual Framework

There is increasing interest to understand why enterprises in low income economies are small, do not grow fast, are unable to penetrate export markets, and often are less productive compared to their foreign counterparts. Recent studies on these issues mainly identify business climate factors, such as macroeconomic prudence, poor trade in logistics, input shortages, high input costs, and shortage in land and finance, as major impediments to enterprise growth in these economies (e.g., see World Bank's 'Light Manufacturing in Africa' study in Hinh et al., 2012). These environmental factors are clearly important, they, however, cannot fully explain the considerably intra- and inter-industry heterogeneity commonly observed within and across low income economies.

A possibly missing capital that attenuates the productivity of other inputs while aggravating the costs from external business constraints is managerial capital (Bruhn et al., 2010). For example, faced with similar external circumstances, firms endowed with better managerial capital often show greater productivity compared to firms with low managerial capital endowment (Bloom and Van Reenen, 2007, Bloom, Mahajan, McKenzie, & Roberts, 2010; Syverson, 2010). Indeed, from several impact evaluation studies, we have gained key insights about the importance of management and business knowledge (Bloom et al., 2010a; Bloom at al., 2010b; Mano et al., 2011; Abebe and Sonobe, 2012; Shibanuma, 2012). This strand of research has greatly enhanced our knowledge on how managerial capital affects productivity and performance of enterprises.

Managerial capital can affect productivity and profitability of enterprises in numerous ways. First, the employment of optimal level of productive resources and their right combination is highly dependent on choices made by firm manager(s). Managerial capital enables better decision making in procurement of machines or equipment, in recruitment, screening and employment of labor with the right skills and motivation. For example, sourcing the right quantity and quality of raw materials and parts is a vital determinant of product quality and marketability. Second, the management of supply chain, production processes, inventory and labor has direct implications on costs of production. Properly managing the workshop including routine production processes, adequately motivating and monitoring workers and the marketing of final products would become increasingly difficult as firms grow and transactions become more complicated. Third, managerial capital is essential to keep track of business performance through regular records and documentations of transactions that will help the firm clearly separate profitable line of activities from loss-incurring ones aiding the firm to better plan for the future. Having solid business transaction records will also facilitate firm's access to formal credit.

Despite all these potential benefits, firms in developing countries often fail to adopt managerial practices conducive for performance improvement. An obvious reason for the perseverance of substandard management practices appears to be low competition and low wages that enables the survival of less productivity firms in the economy. Lack of competition reduces the incentives to make costly innovations including the adoption of better managerial practices, and combined with low labor cost, lack of competition eases the risk of being whittled out of the market.

At the same time, both demand and supply side factors also explain shortages in managerial capital in many developing countries including Ethiopia. From demand side, an important reason that precluded the adoption of better managerial practices is lack of knowledge on potential gains from improving managerial capital. Research shows that entrepreneurs often highly discount the value of managerial improvements and instead choose to rely on habitual or experiential ways of running business (e.g. Bloom et al., 2010; Abebe and Sonobe, 2012)[3]. Even those who have better understanding of the importance of managerial capital often do not have information on how and from where to acquire such knowledge. Furthermore, unlike physical capital, managerial capital is unobservable and uncollateralized limiting the opportunity to use credit market to finance its employment. Understandably, the employment of managerial capital would be lower than optimal levels when the costs associated with improving managerial practices are large and cannot be immediately compensated by rising profits even when long-run profitability increases.

On the supply side, investments in managerial capital suffer from the same problem that bedevils investments in production of knowledge. The benefit of managerial capital investment by individual firms cannot be fully appropriated by the investing firms due to spillovers effects on others firms. There is thus limited private incentive to invest in the acquisition and development of managerial capital as the social benefit by far exceeds the private returns. In effect, such knowledge would be highly under-produced and enterprises choose to free ride, if it is ever produced. Credit constraints may also hinder the entry of talented managers into the entrepreneurial sector depriving the economy of an important source of managerial capital supply. This results in a low-level equilibrium whereby lower demand and supply of managerial capital reinforce one another.

The existence of information asymmetry and spillovers signify the presence of considerable policy space to move out of low equilibrium trap. Basic short-term training programs that enable entrepreneurs to solve routine procurement, production and marketing problems in the most efficient manner are useful to enhance their production capability and expand their product market. The potential externalities from the dissemination of basic, general and widely replicable skills do not only

[3] Abebe and Sonobe (2012) offered basic management training to a sample of small tailors in Addis Ababa free of charge. Few entrepreneurs were willing to participate in the training. Those who participated were more educated and once they started attending the training their attendance rate was strikingly high. Sonobe et al (2011) also finds that both training participants and non-participants became more willing to pay for acquiring training after the training suggesting that information asymmetry might explains low effective demand for managerial capital.

help overcome the shortage of managerial capital but will also have a transformational effect on those enterprises that learn and adopt these skills.

With the objective of improving firm-level productivity and the upgrading of the industrial sector, the Ethiopian government has selected and promoted the diffusion of KAIZEN across the country as a low cost approach to improve enterprise productivity and profitability. KAIZEN is a Japanese management philosophy which is loosely translated as continuous productivity improvement. KAIZEN is a participatory approach that requires the involvement of all layers of managers and workers and that primarily involves a change in mind set of both workers and managers that is geared towards continuously improving product quality, reducing production costs and delivery time (Imai, 1997). In this way, KAIZEN is consistent with improvements in bands of joint managerial practices that yield large effect in productivity. Ichniowski, et al. (1997), for example, find that the productivity effects of clusters of joint human resources practices are considerable while individual work practices have limited effect on enterprise productivity.

By focusing on small and incremental changes that do not require substantial capital outlay, KAIZEN also provides practical guidance to optimize shop-floor arrangements and solve complex production related problems quickly. Entry point of KAIZEN is the separation of value-adding activity from non-value adding ones, the improvements of housekeeping practices and the elimination of wastes. The following subsection provides a brief introduction to these elementary aspects of KAIZEN (interested readers can look at a book by Masaaki Imai, 1997)

3. 5s and *Muda* Elimination

A causal observation of the workshop of enterprises in many developing countries including Ethiopia suggests vast levels of disorder and waste. Removing waste regularly, keeping the workshop tidy and separating raw materials from finished products are nothing more than common sense approaches to improving productivity. Indeed, Imai (1997) argues that KAIZEN should be activated with proper housekeeping and waste elimination practices irrespective of the nature of the enterprise.

In the language of KAIZEN, this involves the practice of 5S and *Muda* elimination. The former involves five interrelated activities that are incremental in nature but dramatic in effect on the workplace. These are Sort, Straighten (set in order), Scrub, Systematize and Standardize. Sorting entails distinguishing between useful and unusable items and removing the latter from the workplace. Removing unnecessary items that are not frequently used in the work place, such as racks, pallets, tools, broken equipment and materials, will easily create more space and led to greater visibility of items that are more commonly used in the workplace. Items that remain after sorting need to be classified by use and arranged so that search time and effort would be kept to the minimum (Imai, 1997). Setting in order thus naturally follows sorting. Scrub entails cleaning workplace, machine and equipment on a regular basis. Regularly cleaning the workshop while makes the workplace pleasant

and safe for workers, it also helps detect potential workplace glitches before they become costly problems.

The forth S is Systematize which emphasizes the need to continuously perform the three S discussed above. Similarly, Standardize entails inculcating the self-discipline required to follow through rules and standards established for the housekeeping process to continue unabated. Indeed, KAIZEN trainers often emphasize the importance of the 3Ss for enterprises in developing countries for two reasons. First, they are easier to implement and through visual inspection, entrepreneurs can easily identify problems in the workshop and become accustomed to solving them quickly. Second, their impact is far-reaching and can lead to considerable level of cost savings.

Not surprisingly, waste (*Muda*) elimination also goes hand-in-hand with the 5S practices as these basic housekeeping practices are "consistent with the introduction of non-value adding operations", which are major causes of wastes (Sonobe et al., 2011). More often than not, waste (*Muda*) elimination simply means cutting back on tasks that appear to be carried out excessively and hence will be the easiest to start implementing in a workplace(Imai, 1997). There are several processes that do not add value in the enterprises such as unnecessary movements of workers and machines and large inventories. At each processes, identifying and reducing the incidence of these non-value adding activities results in small gains. The combined productivity effect of these seemingly small changes is, however, enormous.

4. Nature and Contents of In-Company Training

Maintenance and improvement are major features of management in the eyes of KAIZEN and hence management can be understood simply as a process of maintaining and improving standards (Imai, 1997). An essential prerequisite for introducing KAIZEN in a workplace is a change in management attitude that begins with the admission that the status quo or business as usual is a suboptimal arrangement and can be improved without dramatic restructuring of the firm.

Recognizing KAIZEN's potential to contribute to the improvements of enterprises in Ethiopia, EKI and JICA commissioned a project "with the objective of establishing a mechanism of permanently disseminating quality and productivity improvement (KAIZEN) to private enterprises" (JICA and JDS, 2012). The project had three major components: (a) building EKI's in-house training and expertise capacity, (b) disseminating KAIZEN to large and medium enterprises (LMEs) relying mainly on EKI's in-house expertise, (c) disseminating KAIZEN to micro and small enterprise (MSEs) operators using trainer from Technical and Vocational Education and Training (TVET) colleges who in turn acquires KAIZEN knowledge from EKI trainers.

Dissemination of KAIZEN in cases of both LMEs and MSEs mainly involved in-Company training that was focused on introducing and developing KAIZEN practical ability. The in-Company training focused mostly on on-site coaching and provoking problem solving capabilities of entrepreneurs to

encourage them to plan and act independently. Training in critical thinking without a need for continuous consultation with KAIZEN experts is important as the training had a pre-defined timeline and the enterprise will have to carry on without outside help. Trainers carried out scheduled visits to selected enterprises and often spent considerable amount of time discussing about 5S and waste (*Muda*) elimination.

The in-Company training for LMEs was delivered by a team of KAIZEN experts that often included a JICA expert, an EKI lead consultant and about five EKI experts. The training was held for three hours a day, one day per week for five consecutive months. On the other hand, the training for MSEs was offered by instructors of TVET colleges, and the training lasted for three hours a day, one day per week for two months. The training mainly dealt with elementary KAIZEN principles of the first 2 or 3Ss and waste elimination.

Our overarching hypothesis is that managerial knowledge is a binding constraint for the efficient operation of enterprises, interventions that relax such constraints will have meaningful effect on enterprise productivity. The corollary of this hypothesis is that simple and inexpensive workplace KAIZEN exercises such as distinguishing between value-adding and non-value adding activities, removal of dust and garbage stains, reducing the frequency of movement of workers and materials, shortening travel distances, conducting regular checks on machines and equipment and applying preventive and predicative maintenance can significantly reduce wastage and costs. Such gains in cost-savings would be translated into greater productivity and possibly higher sales turnover and profitability. We will test the validity of these hypotheses using baseline and follow-up firm surveys of KAIZEN training participants and non-participants in the manufacturing sector.

5. Sampling and Selection

In this sub section, we discuss the process of generating the sample of enterprises and their selection into the following two distinct groups: (a) treatment group represents a group of LMEs and MSEs that received in-Company training (ICT) offered by EKI for LMEs and TVET trainers for MSEs, (b) control group which does not receive ICT. Regarding sampling, the Ethiopian Investment Agency's list of operational business in the manufacturing sector was used as a frame from which LMEs were selected. For MSEs, various enterprise lists from the Federal Micro and Small Enterprises Development Agency (FeMSEDA) and the Regional Micro and Small Enterprises Development Agencies (ReMSEDAs) were employed.

In both LMEs and MSEs cases, sample selection was non-random and mostly attempted to ensure balance across different activities in the manufacturing business. The sampling procedure started with document review of enterprises that appear on the long list. From the sampling frame, a few enterprises that were thought to be more amenable to the effective assimilation and application of KAIZEN were shortlisted (the criteria adopted are presented in Annex 1 in detail).

The next process involved screening and selection of enterprises for ICT. This was done in different batches at different points in time, and for each batch, the same set of criterion and processes of screening was carried out. To ensure that the "*right*" types of enterprises are selected for the training, preliminary diagnosis through enterprise visits by members of EKI was conducted. The purpose of the visits was to select eligible enterprises from the shortlisted enterprises. The EKI team screened LMEs on the basis of size, proximity to Addis Ababa, contribution towards export or import substitution, lack of external assistance by development partners[4] and the scope for the introduction and application of KAIZEN. These parameters were given varying weights ranging from 5 (geographical proximity) to 20 (contributions to export or import substitution) which brought the combined scale to 100.

For MSEs the following three screening criteria were mainly adopted in selecting enterprises for ICT, (1) scope for the adoption of KAIZEN and room for improvement, (2) willingness and motivation of enterprise owner to carry out KAIZEN activities continuously, and (3) willingness and motivation of workers and supervisors in the participation of ICT and the sustained application of KAIZEN tools. As in the case of LMEs, each shortlisted company was visited by EKI team and evaluated and scored on these three criteria to determine whether the enterprise is eligible for ICT or not.

6. Baseline Characteristics of Enterprises

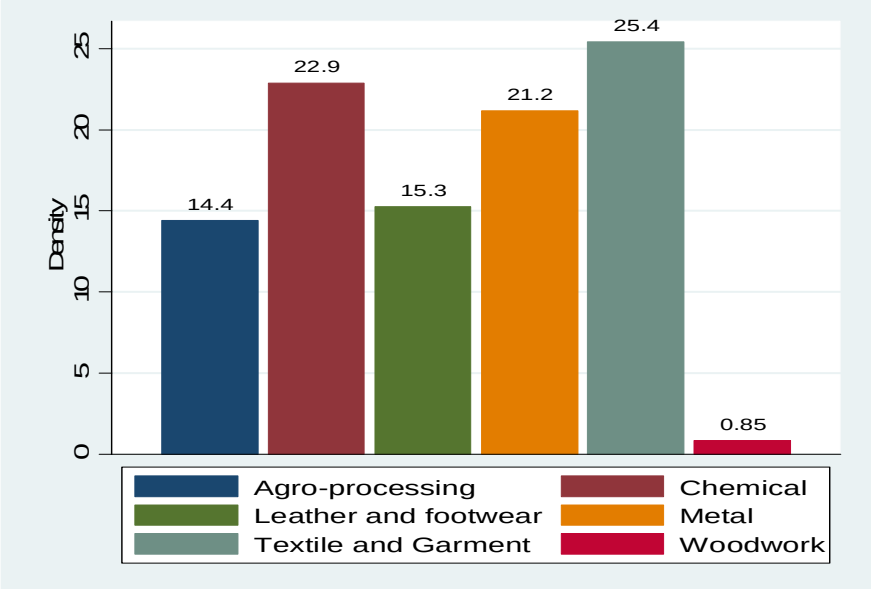
6.1 Large and Medium Enterprises (LMEs)

After finalizing the development of the survey instrument, we started the LMEs survey in April, 2012. The sample of LMEs contains firms engaged in five of the eight priority areas identified by the Growth and Transformation Plan (GTP)[5]. Figure 1 shows the distribution of each sector in the sample of LMEs. As shown in the figure, a little more than 25% of the sampled enterprises are engaged in the textile and garment sector. This is not surprising as the sector appears to be in tune with the labor-abundant-capital scarce nature of the economy. About 44 % of the sampled enterprises are drawn from the chemical sector and the metalworking sector, while the remaining 30 percent are from Agro-processing and leather and footwear sectors.

[4] This is particularly to avoid duplication in assistance by aid organizations, such as United Nations Industrial Development Organization (UNIDO) and Deutsche Gesellschaftfür Internationale Zusammenarbeit(GIZ).

[5] In the GTP, there are eight priority industries for medium/large enterprises: textile and apparel, leather and leather products, sugar and sugar related products, cement, metal and engineering, chemical, pharmaceutical and agro-processing industries (FDRE, 2010).

Figure 1 Sector-wise distribution of sample LMEs.

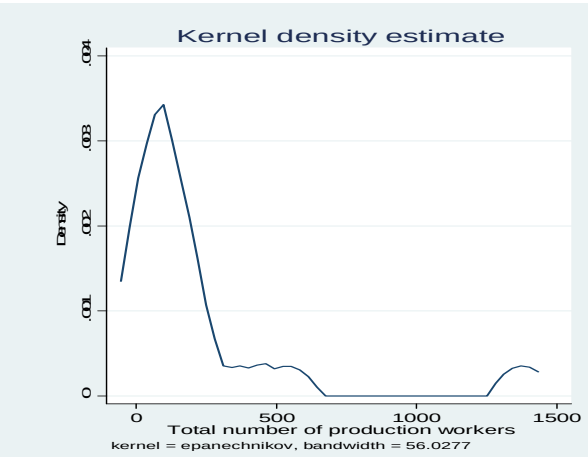


Source: Own computation from the baseline survey of LMEs

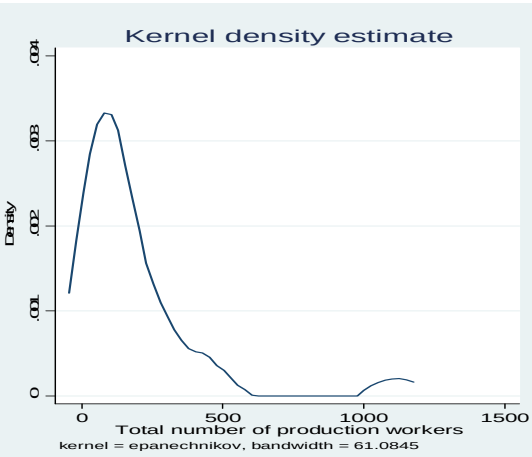
The size distribution of LMEs is indicated in Figure 2. The size distribution reveals striking similarities across industries with few large enterprises and a large number of smaller enterprises in these industries. This is consistent with the missing-middle argument whereby the industrial sector in developing countries is characterized by a large number of small enterprises and few large ones with a visible absence of intermediate-sized firms. This is partly due to the tendencies of small firms to want to continue benefitting from generous state assistance that targets micro and small enterprises under the umbrella of poverty alleviation policy objectives. Similarly, small firms can avoid excessive regulation by staying small and operating outside of the purview of local authorities. Of course, the very nature of developing economies demand structure also foster the formation of small firms that supply low quality products to the local market. The firm will have to carry out multifaceted innovations to move to new line of product and penetrate a new market. Such innovations do not, however, occur in a vacuum and deliberate assimilation, adoption and experimentation with both production and managerial technologies is important for small firms to transit into the medium-size category.

Figure 2 Size distribution of LMEs by sector

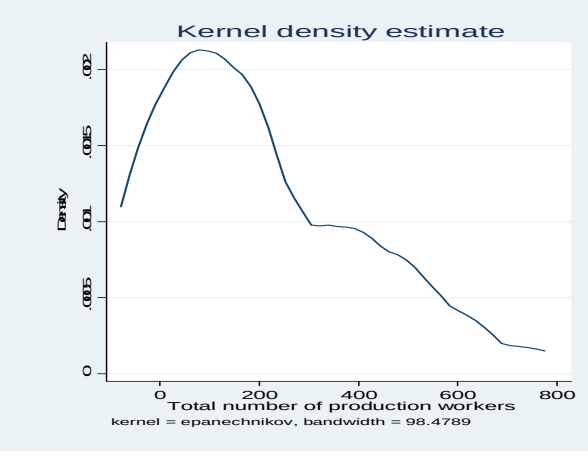
Agro-processing



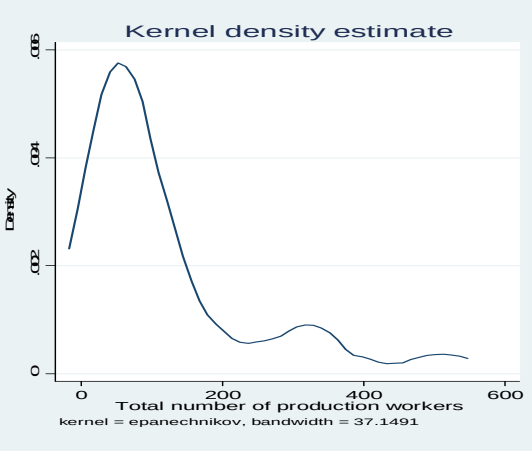
Chemical



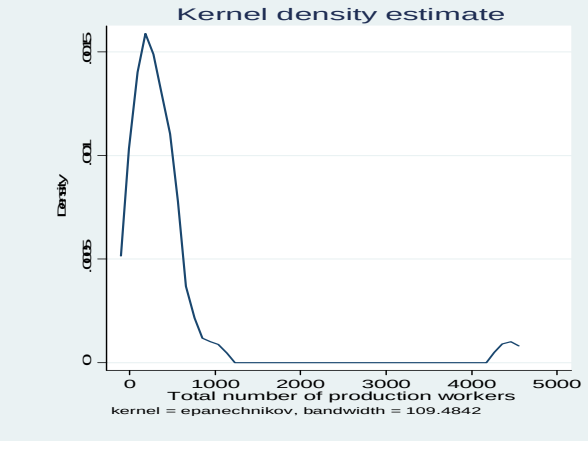
Leather & footwear



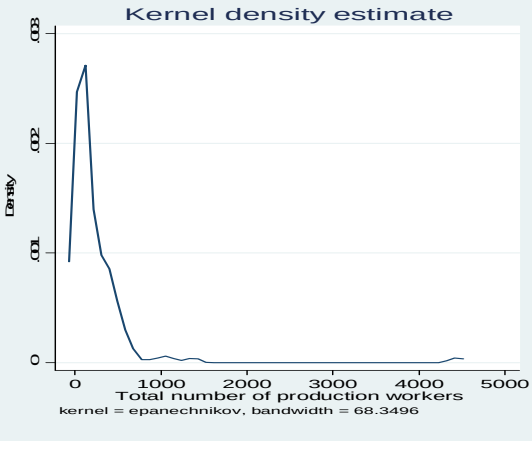
Metalworking



Textile and Garment



Whole sample



The textile and garment sector appears to exhibit the most non-symmetrical distribution with long tails in the right, skewed to the right, suggesting that the sector is made up of both the largest employer in our sample as well as small firms with few number of production workers. The distribution of size measured in terms of number of production workers seem to be relatively more symmetrical in the Leather and footwear and the metalworking sectors.

6.1.1 Human Capital Characteristics

Table 1 describes the human capital characteristics of the main decision maker in the firm at the time of the baseline interview. The first panel explores whether there is any observable difference in personality traits between managers operating firms in the five sectors. As shown in the table, mangers tend to be in a similar age cohort and are predominantly male, 96 % in the chemical and metal working sectors, for example.

Table 1 Human capital characteristics of general manager by sector

	Agro-processing	Chemical	Leather and footwear	Metal-working	Textile and garment	Whole sample
Personality Traits						
Age	41.9	46.7	44.8	45.7	40.5	44.1
Proportion Female	0.12	0.04	0.06	0.04	0.13	0.08
Completed level of Education (%)						
High school	17.6	3.70	5.56	8.0	6.67	7.6
Vocational school	5.88	0.0	0	8.0	0	2.5
University (College)	76.5	96.3	94.4	84.0	93.3	89.8
Total Years of schooling	16.7	17.5	16.4	17.6	17.5	17.2
Labor market experience						
Years of experience in the manufacturing sector	8.50	9.08	7.67	5.94	7.77	7.70
Years of trading experience	2.71	3.67	2.25	1.92	2.26	2.55
Years of management experience	4.82	6.81	5.00	4.64	6.35	2.81
Years of current management experience	7.71	7.84	7.85	8.00	5.38	7.19
Sample size	17	27	18	25	30	118

The second panel illustrates the highest level of education attained by the managers. On average, managers tend to be highly educated with the majority of them having university degrees. The contrast is perhaps between agro-processing, where 23.5 % of the mangers did not go to universities, and Chemical sectors, where only 3.7 % of managers have not attended universities. Managers in the agro-processing and leather and footwear industries appear to have spent the least number of years in schooling on average, which is only marginally lower than managers in other industries.

The third panel presents managers' experience in the labor market including both prior and current levels of experience. Enterprises in the chemical sector appear to be led by managers with the highest years of prior experience in the manufacturing sector. Managers in the metalworking industries have

the smallest number of years of prior work experience in the manufacturing sector. Trading experience, in contrast, appear to be equally low among sectors. The average year of trading experience is more than three and half years in the chemical sectors and nearly two years in the metalworking sectors. Prior management experience is the highest among managers in the chemical and textile and garment sector. Current management experience, on the other hand, appears to be the highest in the metalworking sector and the least in the textile and garment sector. In short, the chemical sector appears to be endowed with managers with better education and labor market experience, the two most commonly used measures of managerial capital.

6.1.2 Enterprise Characteristics and Marketing Channels

Table 2 provides a summary of several types of covariates that are often used to capture characteristics of the enterprise. Enterprises in the leather and footwear sectors appear to have stayed in business for longer periods than enterprises in other sectors. Enterprises in the textile and garment sector have the least number of years of operation on average. Some of the enterprises in our sample are also found to operate multiple plants with the largest number in the agro-processing sector.

Another interesting observation in Table 2 is the difference in ownership among enterprises in these sectors. Enterprises engaged in agro-processing are wholly locally owned either by domestic private investors, the state or cooperative. In our sample of enterprises, there appears no foreign or joint venture ownership arrangement in the agro-processing sector. On the other hand, 30 % of enterprises in textile and garment sectors are either wholly owned by foreign investors (16.7%) or are joint ventures (13.3%). Similarly, one in five metalworking enterprise is either foreign owned or founded jointly with a local partner. In short, foreign ownership appears to be more common in the leather and footwear, metalworking and textile and garment sectors with more than 12 % of the firms in each sector owned wholly by foreigners. State ownership appears to be more common in the chemical sector where 11.1 % enterprises are owned by the state.

Table 2 Enterprise characteristics by sector

	Agro-processing	Chemical	Leather and footwear	Metalworking	Textile and garment	Whole sample
Years of operation	23.7	21.9	27.6	17.2	16.2	21.0
Number of plants	1.23	1.15	1.06	1.04	1.13	1.13
Type of ownership (%)						
Domestic private	88	59.3	77.8	72.0	70.0	72.6
State owned	5.89	11.1	0	4.0	0	4.20
Foreign owned	0	3.7	16.7	12.0	16.7	10.1
Joint venture	0	2.22	0	8.0	13.3	10.1
Cooperative	5.89	3.70	5.56	0	0	2.54
VAT registered (%)	100	100	100	100	100	100
TIN registered (%)	100	100	100	100	100	100
Sample size	17	27	18	25	30	118

As seen in the table, 100 % of the firms in all the sectors considered are registered for Value Added Tax (VAT) and have Tax Identification Number (TIN). This is not surprising as the government has been strict in enforcing tax laws in recent years, and these enterprises are of a considerable size to operate outside the purview of authorities.

Table 3 presents the marketing channel for the most important product by value across sectors. Save for agro-processing, nearly a third of total sales appears to go through own retail stores practically in all the sectors. In the agro-processing, more than 50% of total sales revenue is generated from selling to wholesalers and only 26% of total sales is conducted through own retail stores. Wholesalers are also equally important for the other industries as well; sales using wholesalers are the highest in the metalworking and chemical sectors, and are the least in the leather and footwear sector.

Table 3 Marketing channel for firm's products by sector

	Agro-processing	Chemical	Leather and footwear	Metal-working	Textile and garment	Whole sample
% from total sales through						
Direct sales to users using own retail stores	25.7	46.7	30.7	39.0	29.2	35.5
Sales using other retail stores	7.12	3.70	4.83	40.0	1.67	3.88
Sales using wholesalers	50.6	49.4	10.3	56.8	42.5	43.0
Direct exporting	10.7	0.26	54.2	0.02	26.7	16.7
Sample size	17	27	18	25	30	118

Metalworking enterprises, in addition to melting scrap and the manufacturing of billets, spare parts and reinforcement bars, often offer machining services that require clients to turn up at the workshop (own retail store). Similarly, order for vast quantities of chemical products is often placed after visiting the production site, and hence sales through own retail store would be higher. In contrast, percentage of sales using other retailers store is the second lowest in this sector following the textile and garment industries, and the highest is observed in the metalworking sector with 40 % of total sales revenue generated from sales through other retailer stores.

Table 3 also shows stark differences in export orientation of enterprises by sector. Export from the relatively less labor intensive industries, namely chemical and metalworking, is virtually non-existent. In contrast, more than a quarter and 50% of sales revenue from the textile and garment sector and leather and footwear sector respectively is obtained from sales using export channel.

6.1.3 Management Practices and Product Quality Indicators

The baseline survey contains rich set of management practice, business performance and product quality measures. These set of indicators can be broadly aggregated into eight key non-mutually exclusive practices and measures across sectors. The first set of indicators includes basic housekeeping practices, the use of measurement for informed decision, labor management practices and efforts to eliminate

waste in the enterprise. We construct a score variable for basic housekeeping practices by horizontally summing eleven indicators that describe how raw materials, work-in-process and finished goods are stored, intensity of workshop, machine and equipment cleaning, demarcation of work areas and corridors.

The measurement variable is constructed by generating positive scores for those enterprises that have precisely knowledge of the average duration of each production activity through conscious measurement techniques as opposed to rough estimations. Measurement, for example, refers to the question of whether the enterprises accurately knows the necessary work time to complete a certain volume of production and the difference in productivity among workers who are assigned to similar set of tasks.

Labor management aggregates indicators on whether the enterprise encourage workers to acquire multiple skills, and whether workers are forced to undertake others tasks while operating machines and whether there is a significant productivity difference among workers who are assigned to similar set of tasks. The presence of regular impediments to production processes, such as machine break and work changeovers, the existence of overworked process in some segment of the workplace while other process remains idle, and when machines are not properly arranged in line with the flow of the work are used to proxy for waste (*Muda*). The above four indicators are nominally labeled as management practices.

Regarding quality measures, we have two major sub-categories. The first deals with the process of checking the quality of raw material before admission to the enterprise, particularly when the raw material is procured from new suppliers. Three variables are aggregated to generate the score for the variable called raw material inspection; these are practices of sampling raw materials before procurement from new suppliers, checking the quality of raw materials before acceptance into stores and most importantly establishing quality requirements for procuring raw materials.

The second sub-category deals with product quality measures. This variable is constructed by aggregating practices associated with the presence (or lack thereof) of product specification, process and product inspection and frequency and protocol of inspection. Each enterprise was asked whether they (or their customers) set product specifications for each product they produce, inspect the first pieces (output) of each production run (batches), perform in-process inspection of products regularly and inspect the quality of product before shipping them to customers. The last two variables indicate whether enterprises provide document or certificate for quality assurance or *warranty* for customers and % of final products having some defects.

For the sake of brevity, Table 4 presents the aggregate management practice and quality indicators. Housekeeping scores are the least in the leather and footwear and metalworking sectors. This is mainly

due to large material, work-in-process and finished product inventory that is kept in the workplace[6]. As discussed earlier, without properly sorting items that are required in the workplace from those that are not, it is difficult to estimate how much material is required and what level of product, process and finished goods inventory is optimal.

Table 4 Management practices, quality measures and level of defective products by sector

	Agro-processing	Chemical	Leather and footwear	Metal-working	Textile and garment	Whole sample
Management practices						
Housekeeping score (maximum=11)	7.76	7.63	6.94	6.72	7.33	7.29
Measurement (maximum=4)	2.41	2.74	2.61	2.2	2.63	2.53
Labor management practices (maximum=3)	2.12	2.3	2.22	2.40	2.47	2.32
Waste elimination (*Muda*) (maximum=3)	2.12	2.37	1.94	2.32	2.07	2.17
Quality measures						
Raw material inspection (maximum==3)	2.24	2.37	2.28	1.8	2.13	2.16
Product quality inspection (maximum=7)	5.59	6.37	6.17	5.52	6.23	6.02
% that issue warranty	18	22	44	36	17	26
% of defective products	2.8	2.3	7.86	4.9	5.69	4.72
Sample size	17	27	18	25	30	118

The chemical sector appears to have marginally better measurement practices. The industry average for this variable appears to be comparable across sectors. Similarly, the waste measure does not show considerably variation across sectors. Table 4 also presents several indicators of product quality in the five sectors. Integrating quality-conscious production system, such as sampling raw materials, establishing procurement procedures, inspecting product quality and providing warranty for customers, into the day to day operation of the firm can enhance product quality and hence would help the firm earn premium on improved quality.

As shown in the table, the majority of firms except in the metalworking sector appear to sample raw materials before procurement from new suppliers. Most firms also responded that they check the quality of raw materials and set product specifications for each product they produce regardless of the sector. Inspection of product quality at various stages of production is also common in our sample. Less than 20% of firms in the agro-processing, textile and garment sectors, however, provide any forms of certificate for quality assurance for their customers. This is perhaps due to the nature of the industry where durability and hence the issuance of warranty is not a major feature of the product. While defects are sometime unavoidable, production in the leather and footwear and textile and

[6] Also, cleaning of machine and equipment appears not to be carried out on regular basis in the metalworking sector.

garment sectors is associated with higher levels of defects, reaching 7.9 % of total production in the former industry.

6.1.4 Employment and Accounting-based Measures of Performance by Sector

Table 5 presents the employment characteristics of the five sampled sectors. Similar to the kernel density graph indicated in Figure 2, the Table shows that the textile and garment sector employs the largest number of people on average followed by the chemical, agro-processing sectors and leather and footwear sectors. Not surprisingly, agro-processing sectors employ the largest number of temporary or seasonal workers.

Table 5 also shows that more supervisors, foremen and quality control personnel are used in the textile and garment and chemical sectors on average. This is not surprising, since this sector employ the largest number of workers; they would require employing more supervisors and foremen to monitor workers. The leather and footwear sector, on the other hand, while employing the smallest number of workers next to the metalworking sector on average, it is found to employ 12 managers and 15 marketing workers on average, which is the highest among the sectors in our sample. In contrast, the least numbers of marketing workers were employed in the metalworking and textile and garment sectors.

Table 5 Employment characteristics of enterprises by sector

	Agro-processing	Chemical	Leather and footwear	Metal-working	Textile and garment	Whole sample
Average number of workers	273	300	272	147	535	322
Average number of paid workers	269	298	270	146	532	319
Average number of unpaid family workers	0.18	0	0.06	0.2	0.13	0.11
Average number of production workers	210	179	203	117	426	238
Of which are permanent	96	135	157	101	362	185
Of which are temporary	114	44	46	16	64	54
Average number of supervisors and, foremen and quality control personnel	7	11	11	7	19	12
Average number of managers	7	10	12	6	10	9
Average number of marketing workers	9	15	15	6	4	9
Sample size	17	27	18	25	30	118

Table 6 presents several accounting-based measures of performance for 2010/11 and 2011/12. Annual average sales were the highest in the metalworking sector in 2010/11 averaging 64.6 million birr in the same period. The least sales value was recorded in the textile and garment sector, which was 3.5 fold less than average sales in the metalworking sector. In 2011/12, annual average sales in the chemical sector was slightly higher than sales in the metalworking sector. This was not because sales in the

former increased significantly but rather because sales in the metalworking sector plummeted by nearly 31 % to 49 million birr.

Consistent with Table 3, the leather and footwear sector sales close to 50% of its products abroad, followed by the textile and garment sector, which exports more than 22 % of its products. Exporting in the chemical and metalworking sector are virtually non-existent. The capital and knowledge-intensive nature of production in these sectors would mean that Ethiopia has limited comparative advantage to compete for a share of the international market for these products. These sectors are, however, domestically more important not only because they have comparatively higher sales size but also because they add higher value as shown in Figure 3. On the other hand, value added is the least in the leather and footwear and textile and garment sectors.

Table 6 Accounting-based measures of performance across sectors in 2010/11 and 2011/12.

Industry averages	Year	Agro-processing	Chemical	Leather and footwear	Metal-working	Textile and garment	Whole sample
Sales revenue in millions of birr	2010/11	30.1	58.3	25.5	64.6	18.5	40.5
	2011/12	25.6	53.7	16.0	49.0	11.9	32.5
% of total sales exported	2010/11	10.5	0.2	49.1	0.30	23.7	15.1
	2011/12	10.7	0.2	46.6	0.20	22.3	14.5
Raw material cost in millions of birr	2010/11	17.7	36.6	19.9	48.1	10.5	27.8
	2011/12	14.8	30.5	14.4	44.3	15.4	24.8
Labor cost in millions of birr	2010/11	0.9	4.1	1.51	1.75	1.2	2.02
	2011/12	0.7	3.4	1.22	1.31	1.4	1.75
Capital stock in millions of birr	2011/12	8.3	79.5	43.5	32.1	20.8	38.7
Sample size	2011/12	17	27	18	25	30	118

Note. All these financial variables are expressed in real terms as the nominal values are deflated using an index for house rent, construction, materials, water, fuel and power. The base year is 2006.

While cost of labor and raw material is high in the chemical and metalworking sectors as shown in Table 6, Gross profit remain the highest in the two sectors, and appears to have increased in 2011/12 compared to 2010/11 in the chemical sector. The textile and garment sector has the lowest value added and gross profit among sector considered here. Despite the presence of abundant labor force, and raw materials (including cotton), the textile and garment sector appears not to have prospered. This partly due to shortage of imported fabrics, high transportation and transaction costs of imports, and limited marketing and management knowledge of general managers and owners of these enterprises (e.g., see Sonobe and Otsuka, 2011, pp 195-217). Figure 3 also shows that gross value added and gross profit are positive in the whole sample.

Figure 3 Value added and gross profit by sector in 2010/11 and 2011/12

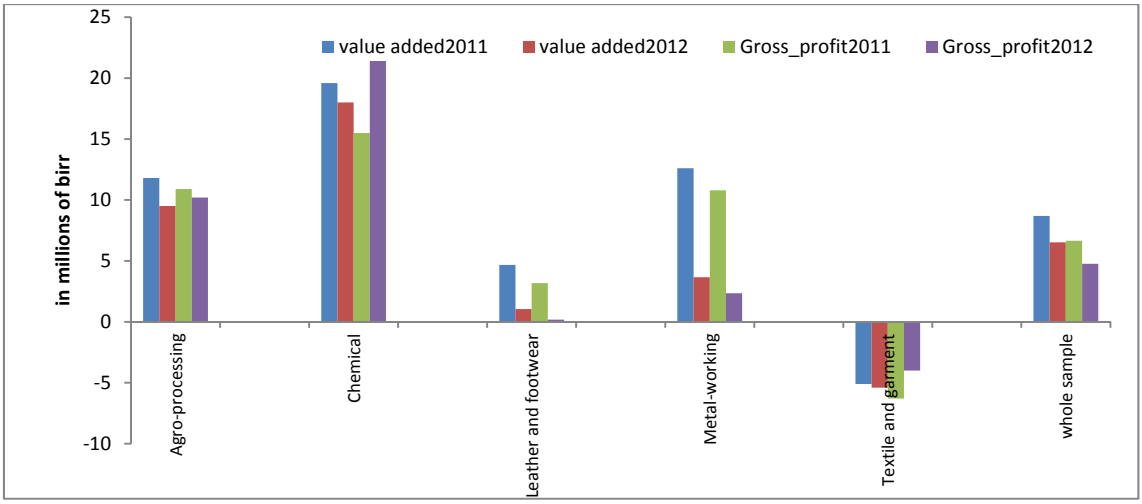


Figure 4 presents a measure of labor productivity (given by the ratio of value added to number of workers) and capital productivity (measured by the ratio of value added to capital stock) along with capital labor ratio and number of workers by sector. The former two are presented on the vertical axis in the left.

Labor productivity is often positively correlated with capital intensity (or labor capital ratio) as greater use of capital enhances productivity of labor. Labor productivity can simply be represented by the arithmetic combination of capital labor ratio and output (value added) to capital ratio as presented in equation 1.

$$\frac{Y}{L} = \frac{Y}{K} \times \frac{K}{L} \qquad (1)$$

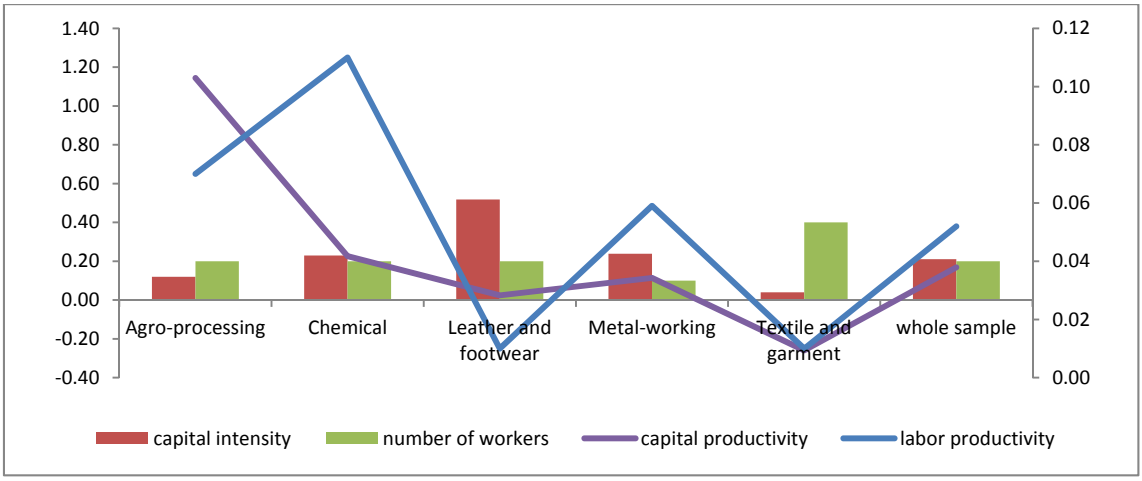
Where Y is output measured by value added and L is number of workers, and K is capital stock. Equation 1 shows that higher labor productivity arises either from complementarily higher capital productivity or larger capital intensity. Therefore, sectors that employ more capital relative to labor should exhibit greater labor productivity. Indeed, Figure 4 shows labor productivity is the highest in the chemical and metalworking sectors, where capital labor ratio is relatively large.

Both capital and labor productivity are the least in the leather and footwear and textile and garment sectors. This is even more surprising not only because the leather and footwear sector is endowed with relatively higher physical capital intensity, but also it reportedly has the largest capacity utilization levels as seen in Figure 5[7]. This suggests that labor productivity is low not because of production below capacity but mainly because of inefficient utilization of capital as seen by equally low capital productivity. Possible explanation is that the leather industry is plagued with sub-standard production

[7] Capacity utilization rate is standardized using Z-score. We employ the following formula $z_i = {(Cr_i - \mu)}/{Sd_i}$, where z_i is a standard score for enterprise i with mean 0 and standard deviation 1. Crcapacity utilization rate and μ is the sample capacity utilization average.

facilities, employs backward processing technology and suffers from problems in supply chain and inventory management among others (Abebe and Schaefer, 2013).

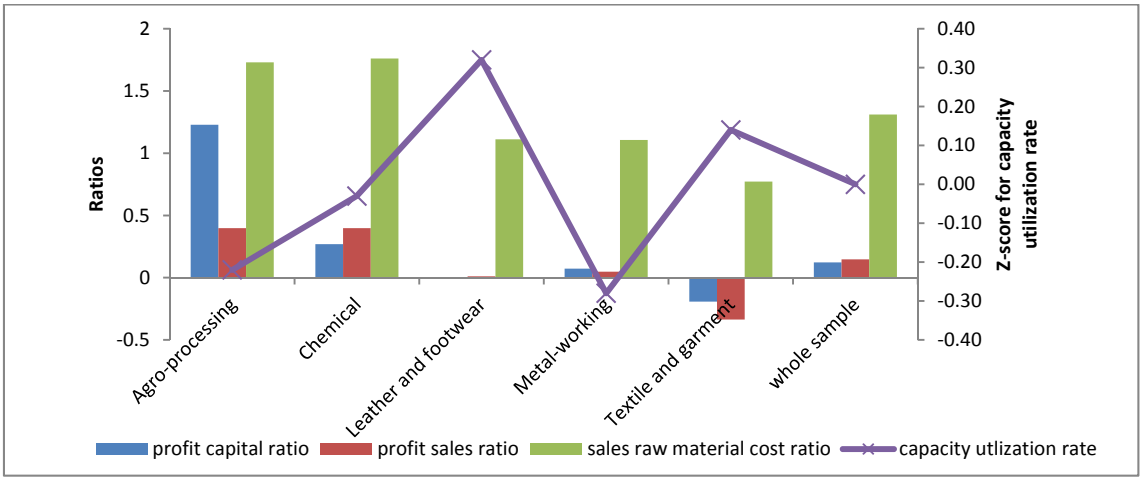
Figure 4 Measures of productivity by sector in 2011/12



The low level of productivity in these sectors is also reflected in their levels of profitability. Consistent with the productivity results indicated in Figure 4, Figure 3 showed that absolute levels of profitability are lower in the leather and footwear and textile and garment sectors. Figure 5 plots profitability per unit of capital employed and per unit of sales revenue. The return to capital and profit per sales appear to be the highest in the agro-processing sector. As expected, capital appears to yield the least level of return in the leather and footwear and the textile and garment sectors. The profit margin from each unit of product sold is nearly zero in the leather and footwear industry and negative in the textile and garment sector.

In contrast, the chemical and metalworking sector enjoy decent return from employed capital, and higher sales turnover per raw material costs. Similarly, each birr (or dollar) spent on raw material is associated with greater sales revenue in the agro-processing sector.

Figure 5 Relative profitability measures and capacity utilization by sector



6.2 Micro and Small Enterprises (MSEs)

The list of MSEs was obtained from the Federal Micro and Small Enterprises Development Agency (FeMSEDA) and the Regional Micro and Small Enterprises Development Agencies (ReMSEDAs). We obtained the third batch MSEs list from EKI and JDS in November, 2012[8]. As in the case of LMEs, the list contained both MSEs that are selected for In-Company Training (ICT) and those that are not selected for the training. Unlike LMEs, however, the list only comprised of enterprises that are already shortlisted for the different batches ICT training[9]. Using this as a sampling frame, we conducted several rounds of surveys to generate data on 106 MSEs in total.

Figure 6 Sector-wise distribution of sample MSEs.

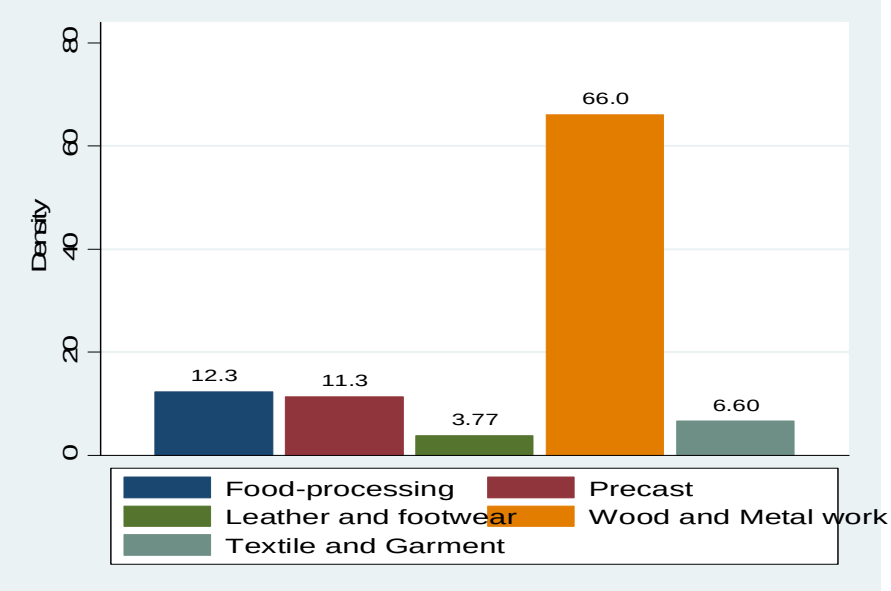


Figure 6 shows that 66 % of enterprises are sampled from wood and metalworking sector. This sector encompasses a variety of industrial activities in urban small-scale manufacturing with a diverse set of products including kitchen and office cabinets, table and chairs, sofa sets, roofing structures, floor tiles, metallic doors and windows, threshing machines, vehicle and grinding mill spare parts.

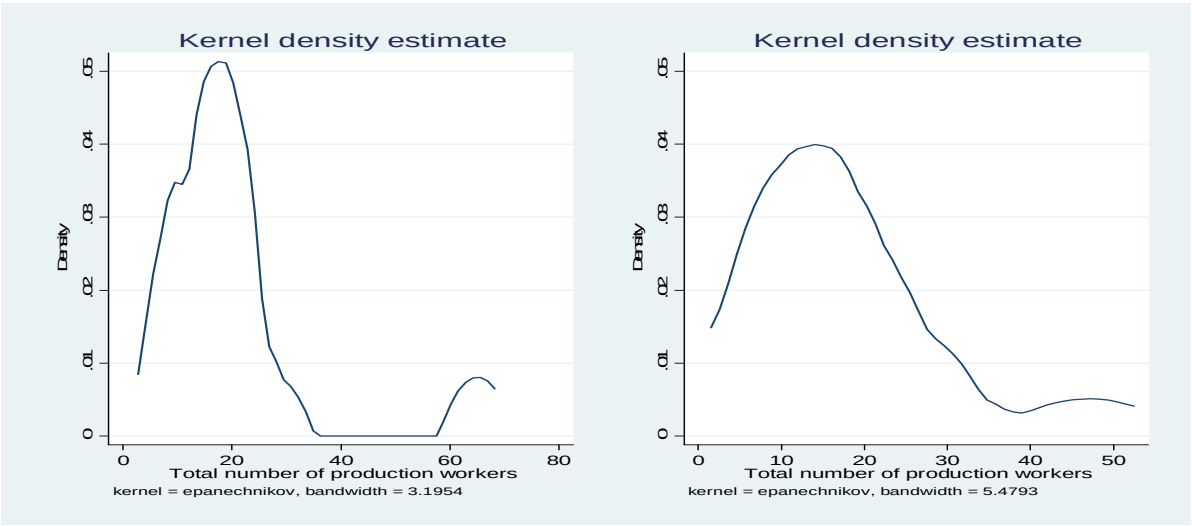
As shown in Figure 6, more than one in five MSEs are engaged either in food processing or precast sectors. The former involved the preparation of injera, shiro (chickpeas) and berbre (chilly). Enterprises in precast sector are mostly engaged in the making of bricks and concrete blocks. Textile and garment producers account for about 6.6% of MSEs in our sample. These enterprises mainly produce traditional cloths, bed and sofa covers, school outfits, sweaters and jackets. Figure 6 also shows that less than 4% of MSEs are engaged in leather shoes, bags and jacket production.

[8] By the time that our study project was launched, the In-Company training for the earlier two batches of MSEs was already underway, and hence we could not collect baseline data for these two batches.

[9] In such a case, there is a doubt whether the sample drawn from this list can represent the universe of MSEs that are operational in Addis Ababa and surrounding areas. Sector-wise, however, these enterprises are operational in business activities that are considered to be in the growth-oriented sectors as defined by FeMSEDA.

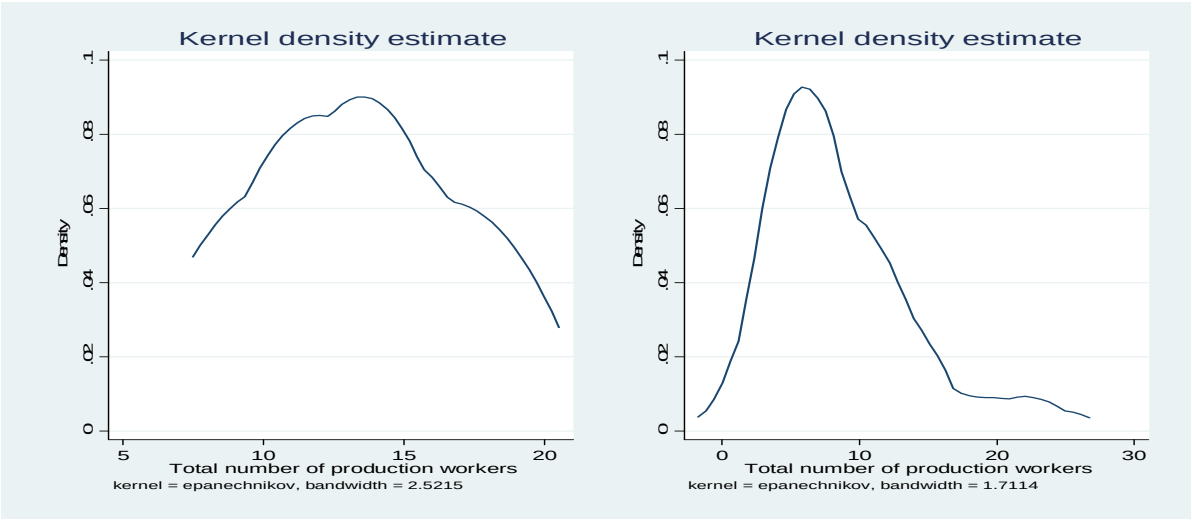
Figure 7 Size distribution of MSEs by sector

Food-processing



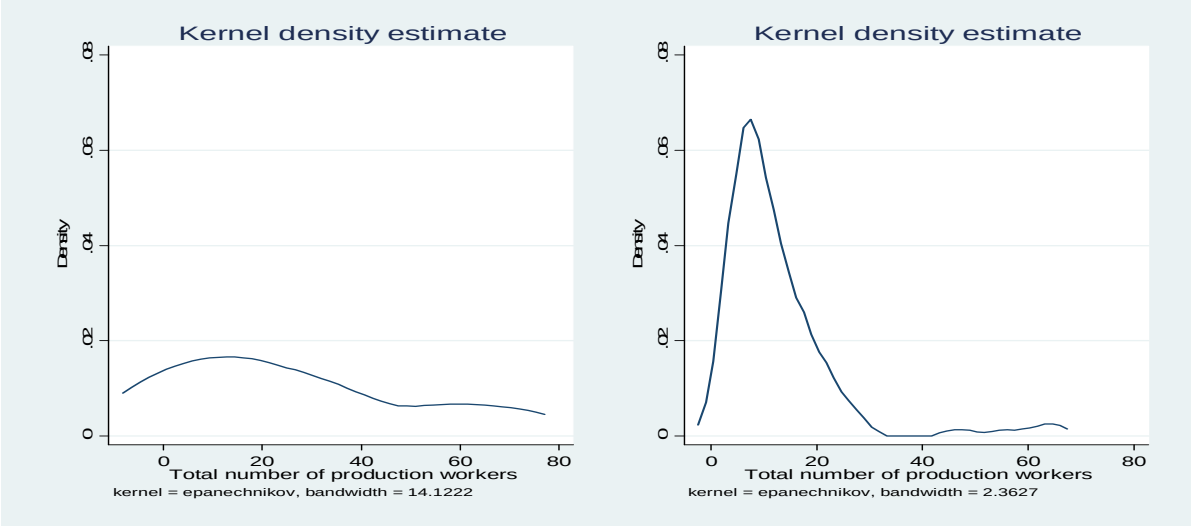
Precast

Leather and footwear



Wood and metalworking

Textile and garment



Whole sample

Figure 7 presents the size distribution of MSEs for each sector separately as well as for the whole sample. As in the case of LMEs, size is approximated by number of production workers. Except for the leather and footwear industry, where employment in the industry closely resembles a normal distribution, the kernel density estimates appear to be highly skewed to the left suggesting the presence of relatively large number of micro firms and very few large firms.

In terms of enterprise size, the largest firms appear to be in food-processing and textile and garment sector. We recall that the textile and garment industry is found to consist of very large firms in the LMEs sample too. In relation to this, another noteworthy observation in Figure 7 is the presence of medium sized firms in our sample. According to FeMSEDA (2011), enterprises that employ less than 6 workers are considered as micro, and those that employ between 6 and 30 workers are considered as small (see Annex 2 but more recently a minimum capital ceiling of 1.5 million birr is set as a cutoff to separate MSEs from medium sized enterprises). Yet our sample contains several firms that employ more than 30 workers that are not part of the MSE sector, at least according to the definition of FeMSEDA. For the sake of consistency, however, we continue to use the label micro and small enterprises for our sample of firms that did not pass the selection criteria for the LMEs survey.

6.2.1 Human Capital Characteristics

Table 7 presents personality traits, completed levels of education and labor market experience for founders, owners and managers of MSEs. In the absence of direct and observable measures of managerial capital, human capital characteristics are often employed to capture firm-level managerial endowment.

Formal education promotes enterprise growth by enhancing the faculty of the entrepreneur to learn more about new production processes and product design. This raises managerial flexibility by increasing the ease with which he can get acquainted with practical knowledge conducive to firm expansion (Nichter and Goldmark, 2009). Experience or learning-by-doing, on the other hand, enables defter and nuanced navigations of markets and its significances increases with firm growth. This can contribute to enterprises growth in at least two ways: directly through enhancing the competence of the entrepreneur and his employees through built up knowledge over time and indirectly by expanding the entrepreneurs sphere of contact or network (Nichter and Goldmark, 2009).

Reassuringly, both generic human capital as usually expressed in terms of education level of entrepreneur and specific human capital as expressed in terms of specific work experience has been found to be significant in explaining managerial capability in a number of studies (Sonobe and Otsuka, 2006, 2011, Nam et al., 2009). Table 7 shows that younger entrepreneurs are engaged in the making of bricks and blocks, while tailors and ready-made clothing producers appear to be managed by more older enter pruners.

Table 7 Human capital characteristics of owner-managers by sector

	Food-processing	Precast	Leather and footwear	Metal and wood working	Textile and garment	Whole sample
Personality Traits						
Age	40.2	24.8	31.3	37	46.6	37.6
Proportion Female	0.62	0.33	0	0.06	0.57	0.19
Completed level of Education (%)						
No formal schooling	8	0	0	3	0	3
Primary school	54	17	0	14	29	20
High school	30	8	75	33	57	33
Vocational school	0	42	0	29	0	24
University (College)	8	33	25	21	14	21
Total Years of schooling	8.31	12.83	12	12.56	11	11.9
Labor market experience						
Years of experience in the manufacturing sector	0.85	3	7	5.7	5	4.8
Years of trading experience	1.85	0	0.75	0.69	1.29	0.79
Years of management experience	1.08	0.92	2.75	2.2	3.79	2.04
Years of current management experience	4.88	3.78	5	5.74	9.21	5.62
Sample size	13	12	4	70	7	106

An additional entrepreneur characteristic that may influence enterprise growth is gender of the entrepreneur. Unlike the LMEs' sample, where there were only a handful of female managers, there appears to be greater engagement of female entrepreneurs in the MSEs sample. More than 60% of food-processing and about 57% of textile and garment entrepreneurs are operated by female entrepreneurs. This is consistent with the observations that there are a large number of micro, small and medium scale enterprise owned and operated by women across the developing world; almost two third of enterprise in Latin America and Africa are owned by women (Mead and Liedholm, 1998). What is more, as seen in Table 7, the lines of businesses female entrepreneurs choose to engage in are business ventures that can be easily operated from home.

Table 7 also shows that 8% of enterprises in food-processing and 3 % in metal and wood working are run by entrepreneurs with no formal schooling. Three in four enterprises in the leather and footwear sector are operated by entrepreneurs whose highest completed education level is high school. In contrast, the corresponding figure for precast sector is one in four entrepreneurs suggesting higher level of education with nearly 13 years of schooling on average. Vocational education particularly appears to be important in the precast as well as metal and wood working sectors.

Entrepreneurs in the leather and footwear sectors appear to possess longer years of prior experience in the manufacturing sector before setting up their current enterprise. Food-processing entrepreneurs appear to have more trading experience. Such experiences are most likely to be in the informal and

petty trading business. Textile and garment enterprises are headed by entrepreneurs with more previous and current managerial experience.

6.2.2 Enterprise Characteristics and Marketing Channels

A major enterprise feature is its years of existence in business. Indeed, enterprise age may stand for previous general experience, which determines efficiency at the time of enterprise birth. Enterprise-specific experience embodies institutional knowledge that can overtime enhance productivity. Average firm productivity tends to increase rapidly in the first few years after business start-up. Table 8 shows that enterprises in the textile and garment sector are nearly twice as old as enterprises in the next age category, and as the result, they appear to own and operate multiple workshops. Yet to what extent these firms have enjoyed productivity gains is not, however, clear. While we will present productivity measures shortly, we are aware that any productivity differentials among the sectors cannot be immediately attributed to age or any other single factor.

Table 8 MSE characteristics by sector

	Food-processing	Precast	Leather and footwear	Metal and wood working	Textile and garment	Whole sample
Basic						
Years of operation	7.08	6.67	6	7.51	14.9	7.79
Number of workshops	1.15	1.08	1	1.09	2	1.15
Type of ownership (%)						
Domestic private	53.8	33.3	100	71.4	28.6	63.2
Cooperative	46.2	66.7	0	28.6	71.4	36.8
VAT registered (%)	30.8	75	25	55.7	28.6	51.9
TIN registered (%)	92.3	100	100	94.3	71.4	93.4
% from total sales through						
Direct sales to users using own retail stores	63.85	100	5	91.8	83.6	85.47
Sales using other retail stores	7.69	0	45	3.86	8.6	5.75
Sales using wholesalers	28.46	0	50	4.36	7.86	8.77
Direct exporting	0	0	0	0	0	0
Sample size	13	12	4	70	7	106

None of the MSEs are state-owned, foreign or joint ventures. The majority of them, about 63%, are owned by private Ethiopian entrepreneurs. Cooperatives are also important ownership type and represent more than half of the ownership arrangement in the precast and textile and garment sectors.

Table 8 also shows that the preponderant majority of enterprises in food-processing, leather and footwear and textile and garment are not registered for value added tax (VAT). On the contrary, three quarter and more than half of enterprises in the precast and metal and woodworking sector are respectively VAT registered.

The bottom panel of Table 8 presents main sales outlets of MSEs. Except for enterprises in the leather and footwear sector, direct sales using own retail stores appear to be the main marketing channel for

MSEs. Wholesalers are important for food-processing and leather and footwear. As expected, none of the MSEs export their products to the regional or international market.

6.2.3 Management Practices and Product Quality Indicators

Analogous to the case of the LMEs, the baseline survey of MSEs contains a list of questions on several aspects of business, management and product quality indicators. As shown in Table 9, the same sets of variables are employed to capture these indicators. As in the case of LMEs, agro-processing sector appears to engage in better housekeeping practices. The chemical and textile and garment sector scores the highest in measurement and labor management practices respectively, which was also the case in the LMEs sample.

A striking observation is that the level of waste in LMEs is larger than in MSEs, a simple t-test of the difference of their means shows a statistically significant difference even at 1% level of significance. This partly due to size-effect whereby large enterprises can be found to be engaged in a number of non-value adding activities as efficient management becomes more complicated and costly. For example, machine breakdowns and delays in production processes become more acute in enterprisers where capital intensity is higher and the close monitoring of workers is challenging.

On the other hand, the practices of checking raw material quality appear to be the least in the leather and footwear industry. Compared to LMEs, MSEs appear to seldom perform quality checks on raw materials from new suppliers. Similarly, there is a significant difference in measures of product quality of between LMEs and MSEs, where LMEs score much higher in measures of raw material quality and product and process inspection.

Table 9 Management practices, quality measures and level of defective products by sector

	Agro-processing	Chemical	Leather and footwear	Metal-working	Textile and garment	Whole sample
Management practices						
Housekeeping score (maximum=11)	8.54	7.67	5.75	6.56	6	6.86
Measurement (maximum=4)	1.38	2.92	2.5	2.41	2.43	2.35
Labor management practices (maximum=3)	1.77	2.08	2.25	2.3	2.57	2.23
Waste elimination (*Muda*) (maximum=3)	1.92	1.92	2	1.9	1.57	1.89
Quality measures						
Raw material inspection (maximum==3)	1.62	2	1.25	1.91	2.43	1.9
Product quality inspection (maximum=7)	4.92	6.17	4.5	5.56	5.43	5.5
% that issue warranty	0	17	25	34	14	26
% of defective products	5.13	2.85	13.75	7.68	11.01	7.28
Sample size	13	12	4	70	7	106

Compared to agro-processing enterprises in the LMEs sector, where 18% provide some sort of quality assurance certificate for their customers, none of the agro-processing enterprises in the MSEs sector provide customers with warranties. Table 9 also shows that MSEs in the leather and footwear and textile and garment sectors produce that largest proportion of defective products.

6.2.4 Employment and Accounting-based Measures of Performance by Sector

Table 10 presents the nature of employment in the MSEs by sector. Consistent with Figure 4, the textile and garment sector employs the largest number of workers followed by food-processing businesses. MSEs sector is often considered to be dominated heavily by family labor paid in kind with no wage-payment arrangement. In our sample, however, family labor is not an importance source of labor for MSEs.

Table 10 also shows that precast and leather and footwear sectors significantly rely on temporary workers perhaps due to the seasonally nature of demand for their products. Across the five sectors, there appears to be more than one supervisors, foremen or quality control personnel employed to oversee the production processes. Similarly, in many of the enterprises more than one manager including low level management position appears to exist. In contrast, however, very few of the enterprise employ marketing workers. This partly explained by the lack of scale economies in marketing due to small size and paltry by an extensive use of own retail stores or workshop that facilities direct sales to customers; more than 85 % of total sales of MSEs is generated through direct sales to customers using own retail stores (or workshops).

Table 10 Employment characteristics of enterprises by sector

	Food-processing	Precast	Leather and footwear	Metal and wood working	Textile and garment	Whole sample
Average number of workers	21.5	19.9	15	10.5	31.9	14.5
Average number of paid workers	21.5	19.9	14.3	10.3	31.4	14.3
Average number of unpaid family workers	0	0	0	0.1	0	0
Average number of apprentice	0	0	0.8	0.1	0.4	0.1
Average number of production workers	19.9	17.8	13.5	8.6	26.3	12.4
Of which are permanent	14.5	8.8	2.8	5.5	14.9	7.5
Of which are temporary	5.5	8.9	10.8	3.3	11.4	5
Average number of supervisors and, foremen and quality control personnel	1	2.2	1.3	1.1	2.3	1.3
Average number of managers	1.9	2.6	1.5	1.7	1.9	1.8
Average number of marketing workers	1.1	0.3	1.3	0.5	1.3	0.6
Sample size	13	12	4	70	7	106

Table 11 presents basic accounting-based measures of MSEs performance. The first row show average monthly sales for September 2012 and October 2012. Average sales in the leather and footwear enterprises is the highest in both two months and is the least in the textile industry for September 2012, and in the metalworking enterprises for October 2012. Consistent with the literature that the earning of micro and small business owners is prone to dramatic fluctuation, Table 11 shows that sales revenue across sectors fluctuate considerably. For example, slack period sales revenue in enterprises in the metal and wood working sector is less than 15% of revenue generated during peak month in 2012.

Table 11 Monthly sales revenue, major costs articles and total capital stock by sector in thousands of birr.

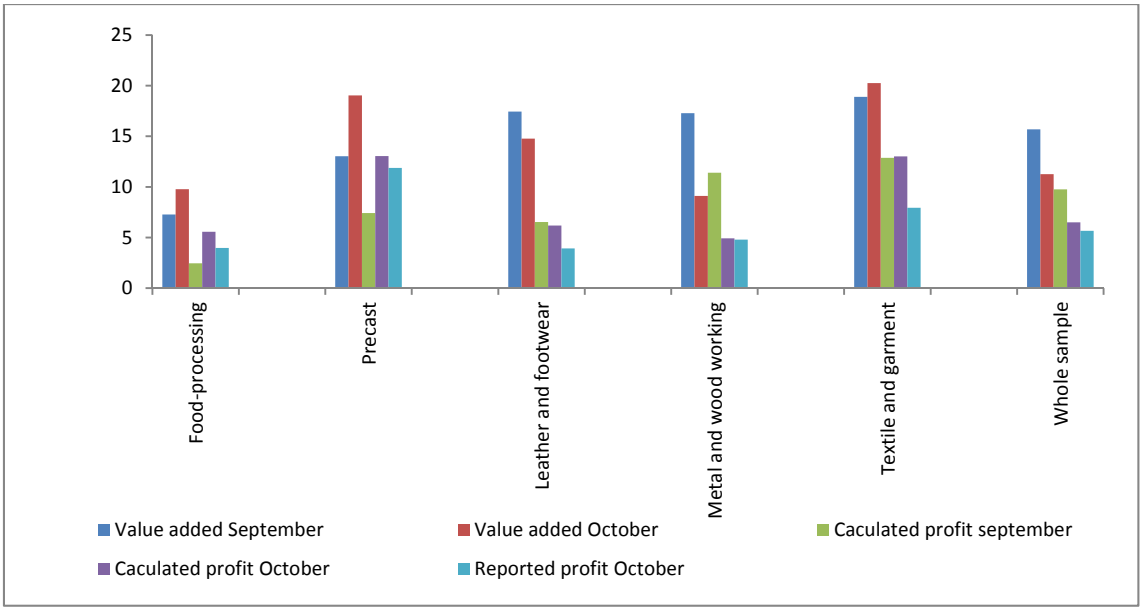
		Food-processing	Precast	Leather and footwear	Metal and wood working	Textile and garment	Whole sample
Sales revenue	September 2012	42.92	33.21	75.59	55.34	23.76	49.99
	October 2012	51.06	38.94	60.82	25.53	32.76	31.99
Sales by main product	September 2012	35.83	28.34	73.13	46.05	5.24	41.12
	October 2012	45.75	27.58	56.26	19.12	5.9	23.87
Sales revenue	Peak 2012	51.28	61.24	83.03	75.2	31.49	68.09
	Slack 2012	24.38	9.97	43.52	10.8	16.54	13.99
Raw material cost	September 2012	32.11	18.85	57.52	37.26	4.44	33.14
	October 2012	37.84	18.33	45.52	15.8	12.03	19.66
Labor cost	September 2012	4.82	5.62	10.91	5.88	6.03	5.92
	October 2012	4.2	6	8.6	4.19	7.24	4.77
Capital stock	October 2012	83.75	116.86	27.97	103.37	41.14	95.53
Sample size		13	12	4	70	7	106

Note. All these financial variables are expressed in real terms as the nominal values are deflated using an index for house rent, construction, materials, water, fuel and power. The base year is 2006.

Raw material cost appears to be the highest in the leather and footwear enterprises and the lowest in textile and garment enterprises. While the precast enterprises employ the smallest number of workers on average next to the leather and footwear sector, they appear to be endowed with relatively large stock of capital.

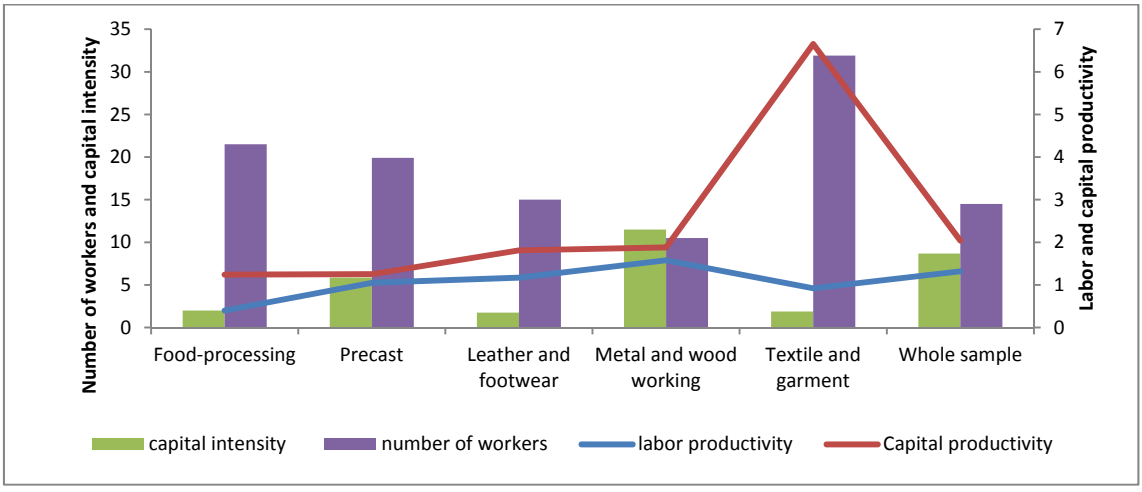
Figure 8 presents value added and gross profit for the months of September and October, 2012 and reported profit for the month of October. Gross profit is calculated by subtracting labor cost from value added, and reported profit is obtained by directly asking entrepreneurs their earnings after paying for all expenses related with running the business. As seen in the Figure, in almost in all the cases, reported profit is lower than calculated gross profit. McKenzie et al (2009) find that self-reported measures of profit are more accurate than calculated profits as entrepreneurs often underestimate or incorrectly recall their sales revenue.

Figure 8 Value added and profit by sector



Unlike the case of LMEs, in the MSEs sample, the textile and garment sector appears to add greater value and enjoy higher levels of profitability as indicated by both self-reported measures and calculated indicators. Similarly, as shown in Figure 9, capital productivity (measured by the ratio of value added to capital stock) is higher in the textile and garment industry. However, consistent with the observation in the LMEs case, labor productivity (given by the ratio of value added to number of workers) remains low partly because of low capital intensity implying that workers do not have sufficient amount of capital for productive use. As illustrated in equation 1, higher level of capital enhances the productivity of labor.

Figure 9 Labor productivity, capital productivity, capital labor ratio and number of workers by sector



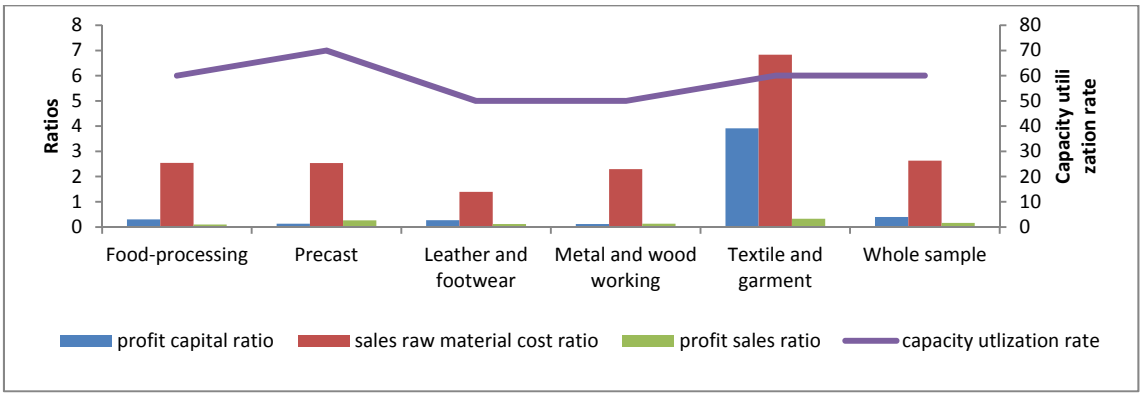
Note. Labor and capital productivity are measured by taking two months averages of value added to number of workers ratio.

From all the five sectors, Figure 8 shows that the food-processing sector has the least value addition and profitability. Similarly, Figure 9 shows that factor productivity (both capital and labor productivity) remain the lowest in this sector. The fact that capital productivity is higher implies that there are workers in these enterprises, who may not be employed productively or there might be more people employed than required in the enterprise. Similarly profit capital ratio and profit sales ratios are the smallest in this sector as shown in Figure 10.

Figure 10 indicates that the industry that has greater capital productivity also enjoy higher return for each Birr of capital investment. In the textile and garment industry, for example, one unit of capital generates 4 units of profit. In the other sectors, however, returns to capital appear to be much smaller.

On the other hand, the profit margin from each unit of product sold is more comparable across sectors, the least ratio being 0.1 in the food-processing sector and the largest 0.33 in the textile and garment enterprises. Capacity utilization rate across sectors does not also exhibit wide variations ranging between 50 to 70% of existing capacity.

Figure 10 Relative profitability measures and capacity utilization by sector



7. Empirical Strategy

As discussed in the sampling protocol section, we collected baseline data on both MSEs and LMEs before the introduction of the In-Company training (ICT) and, a follow-up data after the training. It is important to recall that training participation was non-random as participants were selected on the basis of set of criteria adopted by EKI. This poses a methodological concern on the clean evaluation of the training impact. Non-random selection and training participation implies that the training effect will be compounded with initial differences in physical capital, technology choice, managerial practices and other unobservable human capital attributes of the manager.

A simple before and after comparison will not, of course, be the right methodological approach even in the presence of a control group that does not participate in the training. For example, training participants might be entrepreneurs operating more successful group of enterprises who might have performed better even in the absence of the training and non-participants might be less able managers.

Theoretically, a sound impact evaluation strategy aims to identify the difference between the outcomes of the training participants with the outcomes that would have been observed had there been no training. The latter is unobservable, and hence is often termed as the counterfactual. In randomized controlled trails (RCTs), the counterfactual is constructed by using a control group that will have similar features with the treatment group by design or by virtue of randomization. Absent randomized controlled trail, however, the accurate estimation of a credible counterfactual is more complicated.

In our context, the complication arises from *selection problem*, both self- and program-implementer-selection. Non-experimental approaches approximate the counterfactual by using a comparison group that can potentially remove selection effects. Comparison group can be constructed by taking account of initial differences in the baseline. The availability of baseline and follow-up data (longitudinal data) facilitates the construction of a comparison group that more resembles the treatment group prior to the training.

Figure 11 Baseline difference, trajectories and treatment effects

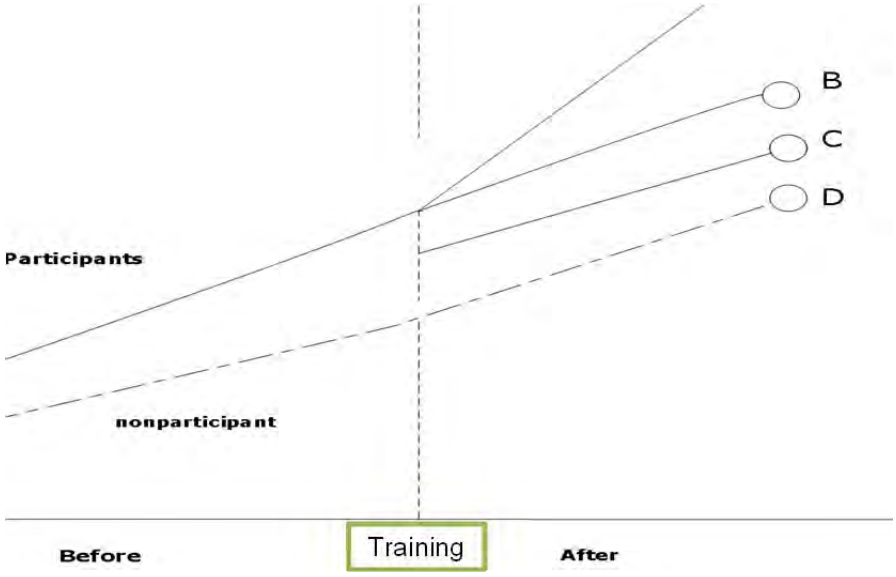


Figure 11 illustrates a hypothetical case of non-random training participation. On the vertical axis, an outcome variable to be evaluated is placed. In this case, participants appear to have higher levels of measured outcome prior to the training compared to non-participants. Moreover, their performance seems to be improving over time as indicated by steeper graph. For the sake of ease of exposure, we use A, B, C and D to indicate four possible outcomes in the post-training period. The researcher, however, only observes two of the data points, A for participants and D, for non-participants. B is the outcome that would have been observed had there been no training and no-change in trend or trajectory. C is the outcome that results from changes only in trajectory or time-effect without training.

In the post-training period, the follow-up data shows (A-D) to be the difference in outcome between the participant and non-participant group. This difference consists of the true training effect (A-B) plus trajectory effect (C-D) and initial conditions difference (B-C).

Difference-in-difference (DID) estimation can easily help eliminate difference in initial conditions between the treatment and comparison group. Employing a variant of DID estimators can help remove both observable and unobservable time invariant difference between the treatment and comparison group that arises from selection into the training. Conditional on the use of DID estimations, both training participants and non-participants can be made to have similar trajectories (For example, Heckman, Ichimura, Smith, & Todd, 1998). Accordingly our empirical approach relies on the use of simple DID and fixed effect estimators to identify the average treatment effect of the training.

The outcome variables of interest are broadly divided into four. These are business practice, product quality, productivity and other financial-based business performance indicators, such as sales turnover and profitability. Business practice indicators include housekeeping, measurement, labor management and waste elimination practices. Practices related with raw material and product quality inspection as well as rate of product defects constitutes the second category. The third group of variables is measures of productivity that are captured by labor and capital productivity indicators. A range of financial-based business performance indicators will also be employed. Both the absolute values and the ratios of sales revenue, value added, gross profit, employment and capital stock will mainly make up the financial-based business performance indicators.

The basic formulation of our model is given in equation 2.

$$Y_{it} = \sigma + X_{it}\,\lambda + \rho\,\omega_i + \psi\,D_t + \theta(\omega_i\,D_t) + \upsilon_{it} \qquad (2)$$

where i and t represents observation and time respectively. The matrix of exogenous variables is indicated by X. This contains human capital indicators such as the years of schooling of the entrepreneur, age and prior labor market experience and enterprise attributes such as years of operation. ω_i represents the participation status of observation i and assumes 1 if i participates in the training and zero otherwise. By explicitly including the participation dummy, ω_i, we can remove the unobserved group fixed effects associated with the participants. The coefficient on ω_i, ρ, measures the influence of the time-invariant differences between the participants and nonparticipants on the variable of interest (Y) irrespective of the training.

D_t is a time dummy which assumes 1 in the post-training period for both the participants and nonparticipants. The coefficient on the interaction between the training participation dummy and the post-training year dummy, θ, identifies the effect of the training on the variable of interest.

Similarly, the first difference estimator is given by equation 3.

$$\Delta Y_i = \Delta X_t \lambda + \psi + \theta\,\omega_i + \Delta\upsilon_i \qquad (3)$$

Heckman et al., (1998) shows that with a weak assumption that trajectory effects are comparable between the treatment and comparison group, θ is unbiased estimator of average treatment effect on the treated. By differencing the follow-up data using mean of each variable, Equation 3 can be transformed into fixed effect model. We thus employ both conditional DID and fixed effect model to estimate the average treatment effect on the treated[10].

As a check for robustness, we also employ non-parametric matching technique to identify the treatment or participation effect. Similar to the DID regression technique, DID matching techniques is preoccupied with the construction of a credible counterfactual. More accurately, matching creates a comparison group which is essentially similar to the treatment group in every observable aspect except for the latter's training participation status. In other words, matching is performed on the basis of baseline characteristics that are fundamentally related to selection into the training program; i.e. matches are created after estimating the predicted probability of participation of both participants and non-participants. This is termed us propensity score matching (PSM) and equation 4 describes the matching model that we adopt. For PSM to be implemented, the sample should comprise of non-participants who share similar baseline characteristics with participants. Using only the post-training value of the outcome variable (Y) PSM can be performed as indicated in equation (4):

$$\delta = \frac{1}{n_1} \sum_{i \in P} (Y_{1i} - \sum_{j \in NP} W(i, j) Y_{0j}) \tag{4}$$

where n_1 is the number of participants in the common support region while P and NP represents the set of participants and non-participants in the common support region respectively. $W(.)$ is a weighting function used in constructing the counterfactual term in equation 6 and assumes different functional forms based on the type of matching estimator applied (see Smith and Todd, 2005). Using both the baseline and follow-up values of the outcome variable the matching model slightly changes to equation 5.

$$\delta_{DIDPSM} = \frac{1}{n_1} \sum_{i \in P} (\Delta Y_{1i} - \sum_{j \in NP} W(p_i, p_j) \Delta Y_{0j}) \tag{5}$$

[10] McKenzie (2012) shows that Analysis of Variance Covariance (ANCOVA) estimator might be more efficient than any form of DID formulation, particularly if the baseline data has limited predictive power. In our context, however, we observe greater autocorrelation in the outcome variable. And since we did not randomize treatment, there is no gain in power by running ANCOVA.

8. The Effect of ICT on Business Practices and Enterprise Performance

The ICT was designed and implemented by EKI, a governmental KAIZEN implementing agency with a technical and financial support of the Japan International Cooperation Agency (JICA). The training primarily focused on the adoption of the basic KAIZEN tools, such as 5S, *Muda, Mura, Muri,* quality management, financial management and entrepreneurship in various subsectors of manufacturing industry. The basic KAIZEN tools, such as 5S were customized in the context of Ethiopian manufacturing industries to lessen hindrances that prevents enterprises from achieving continuous productivity improvement. In this section, we characterize selection, and evaluate the impact of ICT on business practices and enterprise performance for LMEs and MSEs separately.

8.1 ICT in Large and Medium Enterprises

8.1.1 Descriptive Findings

Basic human capital characteristics of firm operators are presented in Table 12, for the participants (those who attended ICT) and non-participants (those who did not attend ICT). The standard errors for the mean differences between the two groups are also presented in the parenthesis. Except for two variables (i.e., proportion of risk neutral firm operators and the proportion of those having strongly hyperbolic time preference), the means for all variables are not significantly different between the two groups. Firm operators tend to be in their early forties and more than 90% are male. The average years of schooling is about 17 years and close to 90% are university or college graduates. Pertinent to their labor market experience, more than 50% of the operators in both groups have manufacturing experience before starting the current business and the average years of prior manufacturing experience for the whole sample is 7.6 years. Almost close to 40% of the entrepreneurs in both groups have prior management experience and the average years of management experience at the current enterprise is 7.2 years for both groups.

Table 12 Human Capital Characteristics of enterprise operators

	Participant	Non-participant	Whole Sample
Personality Traits			
Age	42.6	44.4	43.6
		(2.34)	
Proportion male	90.9	91.5	91.3
		(0.05)	
Completed level of Education (%)			
High school	6.8	10.2	8.7
		(0.05)	
Vocational school	2.3	3.4	2.9
		(0.03)	
University (College)	90.9	86.4	88.3
		(0.06)	
Total Years of schooling	17.3	16.8	16.9
		(0.55)	

	Participant	Non-participant	Whole Sample
Labor Market Experience			
% manufacturing experience (Yes=1)	52.3	67.8	61.2
	(0.09)		
Years of manufacturing experience	6.2	8.7	7.6
	(1.72)		
% trading experience (Yes=1)	11.4	8.5	9.7
	(0.05)		
Years of trading experience	2.9	2.7	2.8
	(1.12)		
% management experience (Yes=1)	36.4	40.8	38.8
	(0.09)		
Years of prior management experience	5.1	6.6	5.9
	(1.23)		
Years of current management experience	7.2	7.2	7.2
	(1.21)		
Social Attitude Indicators (%)			
Is more trusting (Yes=1)	65.9	50.8	57.3
	(0.09)		
Thinks that people are fair(Yes=1)	65.9	62.7	64.1
	(0.09)		
Thinks that people are helpful (Yes=1)	56.8	59.3	58.3
	(0.09)		
Risk preference (%)			
Risk averse	63.6	52.5	57.3
	(0.09)		
Risk taker	36.4	37.3	36.9
	(0.09)		
Risk neutral	0	10.2	5.8
	(0.05)**		
Time preference (%)			
Strongly hyperbolic	9.1	1.7	4.8
	(0.04)*		
Weakly hyperbolic	20.4	25.4	23.3
	(0.08)		
Patient now impatient in the future	20.4	20.3	20.4
	(0.08)		
Sample size	44	59	103

Note. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

To take a closer look at the basic characteristics and performance of firms, we present years of operation, number of plants, sector composition, type of ownership and accounting based measures of performance in Table 13. We notice that firm's years of operation, proportion of foreign owned and cooperative firms and labor productivity are significantly different between the two groups. On average firms in the participants group are about 8 years older than the non-participants group. While about 17% of non-participant firms are foreign owned, no foreign firm is present in the participant group. In contrast, about 6.5% of participant firms are cooperatives and no cooperative firm is included in the non-participant group. Moreover, the productivity of workers in participant firms is significantly higher than those in non-participant firms prior to ICT.

Unlike the aforementioned variables, the rest of the variables that describe firm characteristics and performance (i.e., number of plants, sector composition, proportion of domestic private firms, state ownership, proportion of VAT registered firms, sales revenue, value added, gross profit etc.) are not significantly different between the two groups in the sample. Firms in both groups have on average one manufacturing plant and engaged in agro-processing, chemical, leather and footwear, metal and textile and garment industries. While majority (27.3%) of participant firms are engaged in chemical production, around 34% of non-participant firms are in textile and garment industries. And on average about 75% of the firms in the whole sample are domestic private.

Regarding the accounting based measures of performance, though there is no significant difference in all variables except labor productivity between the two groups, the average sales revenue of participant firms is about 10 million birr higher than non-participant firms. In contrast, the average value added for participants group is less in about 5.5 million birr compared to the non-participants group. Similarly, the average gross profit of the non-participant firms is around 9 million birr higher than firms in the participant group. We observe that except for very few variables, the difference between the two groups is not significant.

Table 13 Enterprise Characteristics by participation status

	Participant	Non-participant	Whole Sample
Years of operation	25.3	17.2	20.6
		(3.51)**	
Number of plants	1.1	1.1	1.1
		(0.08)	
Sector composition of the sample (%)			
Agro-processing	11.4	18.6	15.5
		(0.07)	
Chemical	27.3	20.3	23.3
		(0.08)	
Leather and foot wear	18.2	11.9	14.6
		(0.07)	
Metal	20.5	15.3	17.5
		(0.08)	
Textile and garment	20.5	33.9	28.2
		(0.08)	
Wood work	2.3	0	0.01
		(0.02)	
VAT registered (%)	100	98.3	98.5
		(0.02)	
Type of ownership (%)			
Domestic private	79.5	71.2	74.8
		(0.08)	
State owned	4.5	1.7	2.9
		(0.04)	
Foreign owned	0	16.9	9.7
		(0.06)***	
Joint Venture	9.1	10.2	9.7
		(0.06)	
Cooperative	6.5	0	2.9
		(0.03)**	

	Participant	Non-participant	Whole Sample
Accounting based measures of performance			
Sales revenue in millions of birr	40.0	30.6	34.6
		(13.61)	
Value added in millions of birr	3.54	9.0	6.7
		(8.72)	
Gross profit in millions of birr	0.47	9.1	4.7
		(8.52)	
Profit capital ratio	2.54	1.5	1.9
		(1.00)	
Profit sales ratio	-0.7	0.2	-0.2
		(0.81)	
Sales raw material cost ratio	11.0	2.6	6.1
		(7.11)	
Labor productivity	67.0	35.4	48.9
		(17.40)*	
Capital productivity	3.1	1.8	2.4
		(1.11)	
Capital intensity	128.4	119.7	123
		(49.58)	
Sample size	44	59	103

Note. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Tables14 and 15 presents non-parametric uncontrolled DID results of various management practices and quality measures and accounting based measures of firm performance indicators by participation status. Table 14 particularly summarizes different management practices and quality measures adopted by the two groups of firms.

We consider eight important variables that are meaningfully linked with the content of the ICT. In row 1, housekeeping scores is calculated by generating dummies for 12 housekeeping practices and horizontally summing these practices. This variable is highly connected with the fundamental tools of KAIZEN, 5S (five 'S'), and measures how clean and well-organized the workplace is (see Annex 4).

The measurement variable aggregates the scores given to firms based on how accurately they report to exercise the practice of measuring the average duration of each production activity and accurately estimated the necessary work time based on the work volume involved. The labor management variable proxies how well labor is encouraged to acquire new production skills and narrow the productivity gap among workers.

The waste elimination (*Muda*) variable is generated by summing six practices related with arrangement of machines and equipment, incidences of machine breakage, the presence of idle or overworks production processes. The raw material inspection variable is constructed by horizontally summing three interrelated raw material procurement practices. Similarly, a measure of product quality is drawn from several indicators associated with regular inspections of process and product as well as the use of inspection instructions that lay down the details of quality tests to be carried out. % providing warranty captures firms that provide documents or certificate for quality assurance or warranty for customers buying their products and % defect represents the percentage of final products having some defects.

The first row of Table 14 indicates that housekeeping scores increased for participants after participating in ICT and that the score declined for non-participants firms. The difference is statistically significant at five percent significant level. The measurement variable also shows a noticeable improvement for both groups after the training. The difference, however, remains statically indistinguishable from zero. In addition, while waste (*Muda*) increased in production processes of non-participant firms after the training program, it is significantly declined for the participant firms.

Table 14 Management practices and quality measures

	Participants		Nonparticipants		Change
	Before	After	Before	After	DID
	(1)	(2)	(3)	(4)	(5)
Management practices					
Housekeeping score (maximum=11)	6.18	7.25	7.03	6.90	1.20**
Measurement (maximum=4)	0.73	1.48	0.65	1.29	0.10
Labor management practices (maximum=3)	1.43	1.30	1.35	1.21	0.02
Waste elimination (*Muda*) (maximum=3)	2.57	2.32	2.37	2.58	-0.46**
Quality measures					
Raw material inspection (maximum==3)	2.25	1.70	2.06	1.29	0.23
Product quality inspection (maximum=7)	5.95	6.07	5.69	5.80	0.08
% that issue warranty	0.27	0.43	0.24	0.10	0.30***
% of defective products	3.80	4.28	4.99	6.51	-1.03
Sample Size	44	44	62	62	

Note. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

The training outcomes on accounting based measures of performance are presented in Table 15. We observe that five variables (i.e., value added, gross profit, profit capital ratio, labor productivity and capital productivity) significantly increased for the treatment group after the training program. Looking at the non-parametric difference in difference (DID) of each variable, value added and gross profit for participant group increased in about 38 and 40 million birr respectively following the participation in the training program. Similarly, labor productivity and capital productivity increased by 86 % and 135% respectively compared to pre-training average of the participants.

Table 15 Accounting-based measures of performance.

	Participants		Nonparticipants		Change
	Before	After	Before	After	DID
	(1)	(2)	(3)	(4)	(5)
Sales revenue in millions of birr	40.0	67.6	30.9	38.1	20.2
Value added in millions of birr	3.54	43.1	9.00	10.5	38.1*
Gross profit in millions of birr	0.47	40.0	7.86	7.64	39.8*
Profit capital ratio	2.54	113	1.50	0.26	112*
Profit sales ratio	-0.69	0.29	0.21	0.24	0.94
Sales raw material cost ratio	11.0	3.47	2.61	4.77	-10.7
Labor productivity	67.0	181	35.4	64.2	86.1*
Capital productivity	3.14	137	1.84	0.33	135*
Capital intensity	128	196	120	462	-275**
Sample Size	44	44	59	56	

Note. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

8.1.2 Matching and Econometric Results

8.1.2.1 Participation and Selection

The decision to allow enterprises to participate in In-Company Training (ICT) was determined by observable attributes of both the management team and the enterprise. As indicated in the project document, EKI in collaboration with Japanese KAIZEN experts selected "participating enterprises ...with the objectives of effectively and efficiently conducting In-Company Training". In statistical sense, therefore, selection was perfectly non-random.

Table 16 shows whether there are systematic differences between those who were selected and decided to participate and those who were shortlisted but did not attend ICT. As indicated in the first row of the table, the education level of the manager appears to be positively related with participation status. The effect is however statistically insignificant in all but the specification under column 1. While enterprise age is not one of the criteria adopted to screen participants, it appears to be positively correlated with participation status. An additional year of operation is associated with a 2% increase in the probability of attending ICT. There are two possible explanations for this. First, older firms tend to be more efficient and hence are perceived to be more appropriate to absorb KAIZEN knowledge in the eyes of KAIZEN trainers. Second, older firms had learned about their shortcomings overtime through managerial learning process and hence will be more open to experiment with new management techniques that were previously unknown to them.

Manager's own characteristics also appear to be important in explaining participation status. For example, managers who responded positively to the question that asked them whether they place their trust in people during the baseline survey are highly likely to participate in the training (see the actual phrasing of the question in Annex 3). In fact, probability of participation ranges from 35 % in column 1 to 18 % in columns 3 and 4 for trusting managers. Given that training relevance, quality and its productivity impact cannot be known ex-ante, some managers who are suspicious would be reluctant to spend their time and effort on untested knowledge.

Table 16 Model of participation

	Participation Dummy					
	(1)	(2)	(3)	(4)	(5)	(6)
Years of schooling	0.13**	0.07	0.08	0.08	0.06	0.05
	(0.07)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Years of operation	0.04***	0.03***	0.03***	0.03***	0.02***	0.02***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Manger is male (Yes=1)	-0.25	-0.37	-0.33	-0.34	-0.30	-0.25
	(0.54)	(0.48)	(0.48)	(0.48)	(0.47)	(0.45)
Years of experience in the manufacturing sector	-0.04	-0.02	-0.02	-0.02	-0.02	-0.02
	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Years of prior management experience	-0.04	-0.02	-0.02	-0.02	-0.02	-0.02
	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)
Manager believes that most people can be trusted (Yes=1)	0.95**	0.54*	0.48*	0.47*	0.53**	
	(0.40)	(0.28)	(0.28)	(0.28)	(0.26)	

	Participation Dummy					
	(1)	(2)	(3)	(4)	(5)	(6)
Manager believes that most people would try to take advantage if they got the chance (Yes=1)	-0.10 (0.38)	-0.21 (0.30)	-0.18 (0.30)	-0.19 (0.31)	-0.20 (0.29)	
Manager believes that most people would try to be helpful (Yes=1)	-0.65* (0.34)	-0.34 (0.27)	-0.34 (0.27)	-0.35 (0.27)	-0.33 (0.26)	
Controls for risk preference	Yes	Yes	Yes	Yes	No	No
Controls for time preference	Yes	Yes	No	No	No	No
Controls for ownership	Yes	No	No	No	No	No
Controls for sector	Yes	No	No	No	No	No
Controls for pre-training size	No	No	Yes	No	No	No
Controls for pre-training profit	No	No	No	Yes	No	No
Constant	-1.51 (1.92)	-1.47 (1.10)	-1.61 (1.10)	-1.61 (1.10)	-1.23 (1.00)	-1.20 (0.88)
Number of observations	92	111	111	111	118	118

Note. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Some studies that offer training program, which are very similar to KAIZEN in content, find that invited entrepreneurs are often wary of motives, relevance and quality of training program (e.g., Abebe and Sonobe, 2012). Table 16 provides evidence that more trusting managers are willing to experiment with new and unfamiliar knowledge. As seen in the table, other observable and often unobservable characteristics, such as time and risk preference, are not correlated with the enterprise ICT participation status.

8.1.2.2 5S (housekeeping) and Business Practices

Our hypothesis is that entrepreneurs lack basic management knowledge conducive for operating their enterprises efficiently, and if there is a way to deliver such knowledge using, for example, ICT, they will: (1) improve the way they operate their enterprises; (2) workplace improvements would be translated into greater gain in productivity and profitability. Table 17 presents evidence for the first piece of the hypothesis and Table 18 shows evidence for the second part of the hypothesis.

Table 17 describes the effect of participation on business practice outcomes. We employ a total of 8 business practice indicators described earlier. The first panel presents set of results from simple uncontrolled DID, followed by the Random effect estimates in the second panel. Non-parametric DID-PSM matching estimates are presented in the bottom panel.

In all the three models, housekeeping scores seem to have positively and significantly increased for ICT participants than non-participants. The training has stimulated the adoption of many of the 5S practices that are essential to operating the workplace in more efficient manner. Compared to their pre-training score, housekeeping score has increased by 14.4 % on average for participants; i.e.

$$DID_{estimate} \Big/ Baseline_{average}.$$

Waste or *Muda* elimination was also one of the targets set by ICT. *Muda* elimination involved sequential process that starts with identification of waste and proceeds to categorization, prioritization and eventually to elimination of non-value adding activities. In some enterprises, for example, lead time reduction was considered as an outcome of substation reduction in waste or *Muda* elimination. In other enterprises, waste associated with fuel consumption in melting furnaces and boilers was targeted for reduction. Column 4 indicates that Waste seems to have declined by 27% compared to participants' pre-training average under the DID PSM formulation and by about 9 % under simpler DID formulation without controls.

In columns 2 and 3 of Table 17, the variables indicating measures and labor management, while are mostly positively correlated with training participation, they invariably remain statistically insignificant. Similarly, the values of raw material and product quality scores as well as percentage of defective products do not appear to differ between ICT participants and non-participants.

Statistical significance might be concealed due to the small sample size. Alternatively, in large enterprises some of these changes, such as a decline in proportion of defective products in each production batch, may require time for their effect to be fully revealed. Further collection of follow up data will be informative to explore the effect of the training over time.

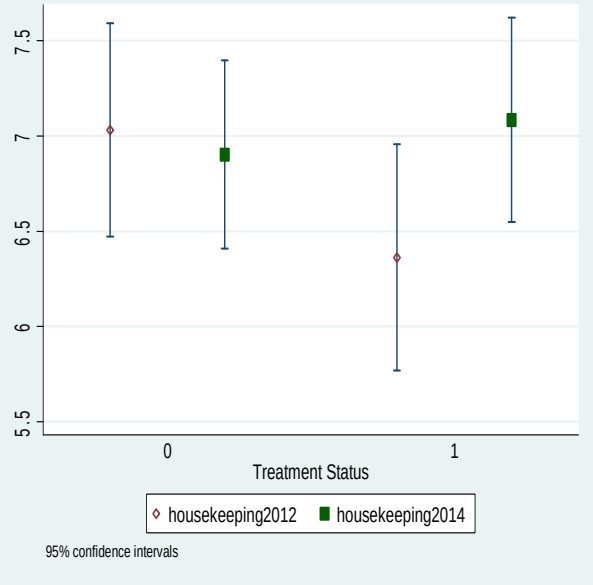
Table 17 The effect of ICT on 5S, housekeeping and business practice indicators

VARIABLES	House-keeping	Measures	labor management	*Muda* (waste)	Raw material quality	product quality	issue warranty	% of defective products
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Uncontrolled DID	1.20**	0.10	0.00	-0.46**	0.23	0.09	0.30***	-1.03
Number of observations	109	109	109	109	109	109	109	109
Random Effect Tobit								
Participation dummy	0.91*	0.10	0.04	-0.54**	0.31	0.01	1.25***	-0.63
×Year 2014 dummy	(0.54)	(0.21)	(0.21)	(0.21)	(0.27)	(0.28)	(0.45)	(0.89)
Participation dummy	-0.40	0.10	0.09	0.26	0.12	0.25	0.06	0.32
	(0.40)	(0.16)	(0.16)	(0.16)	(0.21)	(0.26)	(0.31)	(0.67)
Year 2014 dummy	-0.20	0.70***	-0.18	0.21	-0.86***	0.03	-0.81**	0.70
	(0.35)	(0.14)	(0.13)	(0.14)	(0.18)	(0.18)	(0.32)	(0.58)
Number of observations	227	227	236	227	227	236	227	221
DID-PSM matching	1.31**	0.19	-0.09	-0.70***	0.19	0.10	0.31**	0.31
Number of Observations	108	108	108	108	108	108	108	108

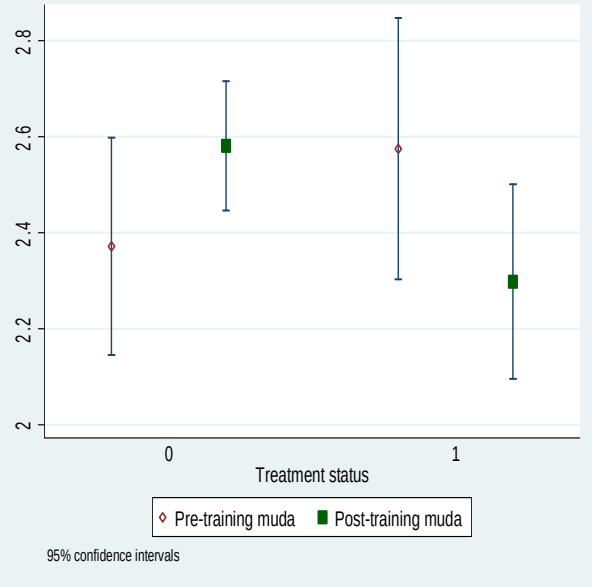
Note. Standard errors in parentheses ,*** p<0.01, ** p<0.05, * p<0.1

Figure 12 Confidence interval plots of 5S, housekeeping and business practice scores before and after training by participation status.

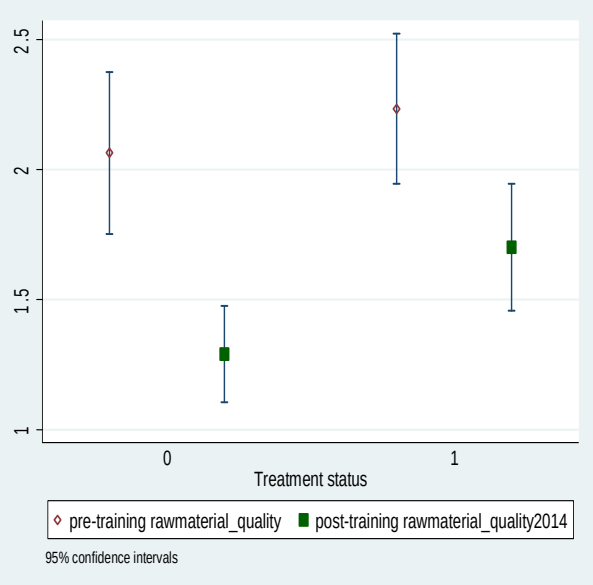
Housekeeping



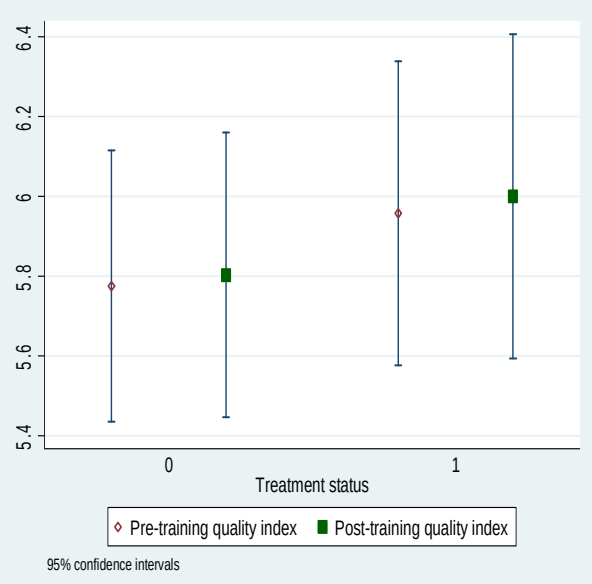
Muda elimination



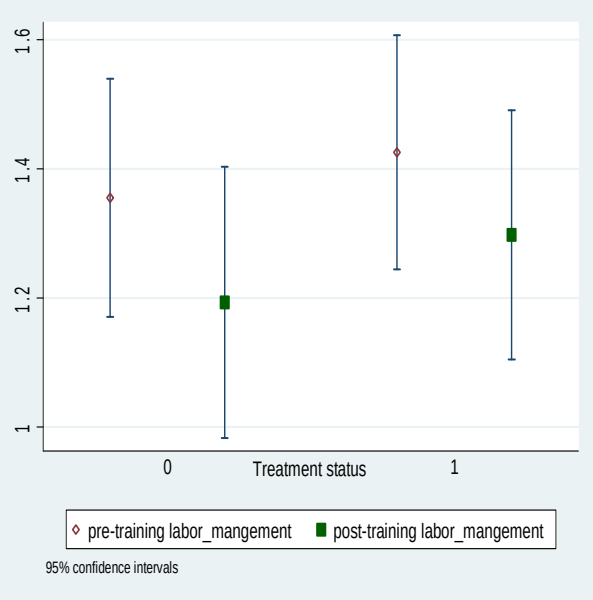
Raw material quality



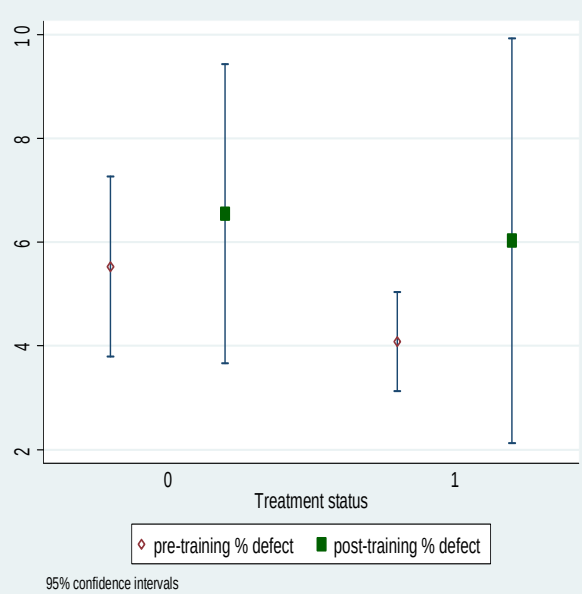
Product quality



Labor management



% of defective products



% that issue warranty

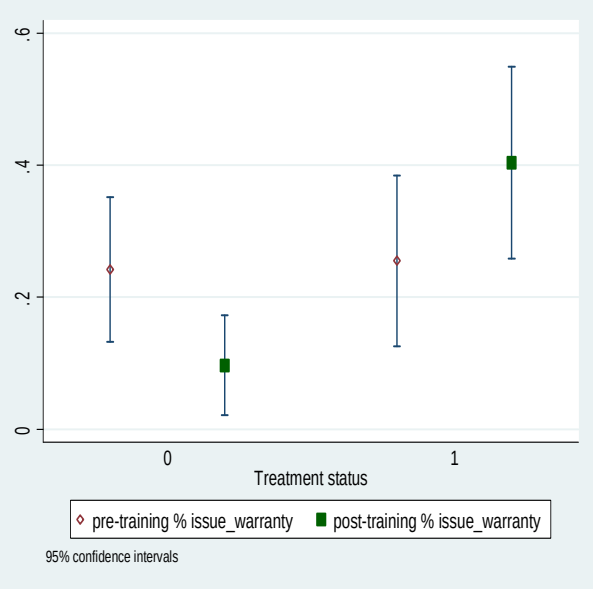


Figure 12 presents further evidence supporting our hypothesis that ICT leads to better workplace management. For example, 5S (housekeeping) practices appear to have substantially moved to the upper most right part of the figure, while it has slightly declined for the non-participants. Similarly, the slope of a line that connects the pre- and post-training levels of waste or non-value adding activities is inversely related with the training participation status implying that participants are able to successfully reduce the level of waste generated through their production activities.

8.1.2.3 Business Performance

Table 18 presents the correlation between training participation and basic business outcome indicators. Similar to Table 17, three different models are used to explore the effect of participation on business

outcomes. In addition, we present the result that excludes 4th batch training participants. Follow-up data collection on the 4th batch training participants took place only after two months of their training[11].

Table 18 shows that the training has strong positive and statistically significant effect on gross profit, value added and labor productivity. The effect on value added of about 51 million birr is, for example, more than double of the pre-training average for participants. Similarly, gross profit has significantly increased for training participants compared to non-participants; i.e. the magnitude of the increment is more than double of the pre-training average of non-participants. Labor productivity appears to have significantly increased for participants. More precisely, the DID value is 38.6% higher than the pre-training mean values of the participants.

These results lend further support to our hypothesis that the training changes workplace arrangement to the better and that these changes have productivity and profitability implications.

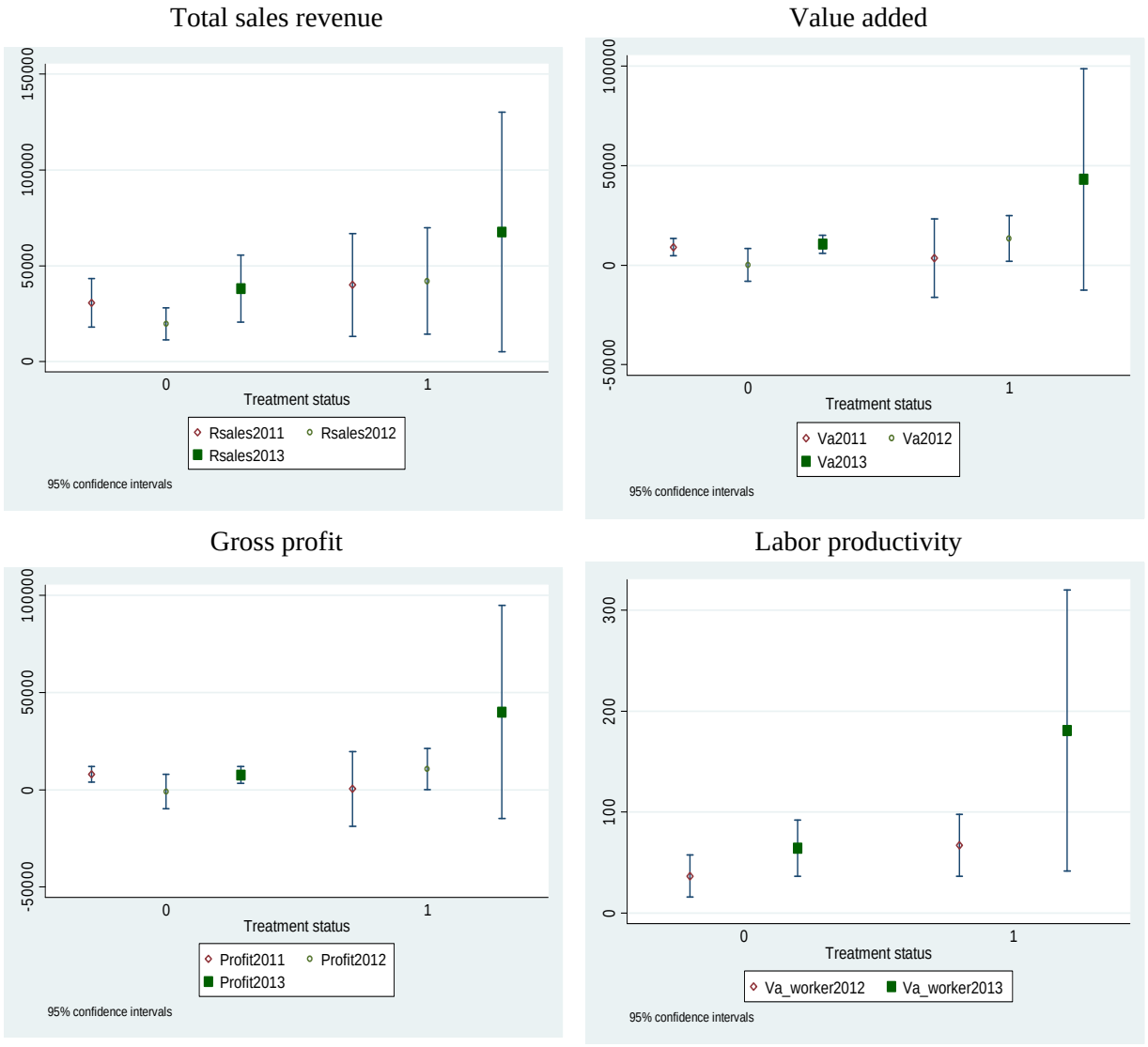
[11] The fourth batch of the treatment group composed of 13 large and medium manufacturing enterprises that attended the ICT very late relative to the first three batches. This might possibly underestimate the impact of the training as these enterprises will only have a very short time to implement the basic tools of kaizen in their business.

Table 18 Panel data regression and matching estimates along with simple DID results on enterprise performance indicators

VARIABLES	Sales revenue (1)	Value added (2)	Gross profit (3)	Gross profit capital ratio (4)	Labor productivity (5)	Value added capital ratio (6)
Uncontrolled DID	20.2	38.1*	39.8*	0.12*	0.08*	0.24**
Number of observations	102	102	102	102	102	102
Random Effect Tobit						
Whole sample						
Participation dummy× Year 2014 dummy	17.92	33.31	35.56	0.99	0.08	0.12
	(16.62)	(21.93)	(22.25)	(0.67)	(0.05)	(1.50)
Participation dummy	9.66	5.87	4.14	0.38	0.04	-0.91
	(10.80)	(14.20)	(14.40)	(0.42)	(0.03)	(0.94)
Year 2014 dummy	7.59	-7.73	-9.59	0.01	0.04	0.97
	(20.69)	(16.21)	(16.31)	(0.47)	(0.04)	(1.06)
Number of observations	215	212	212	185	212	190
Excluding 4th batch participants						
Participation dummy× Year 2014 dummy	29.69	51.35**	53.70**	1.15	0.12**	-0.09
	(19.35)	(25.48)	(26.33)	(0.74)	(0.06)	(1.63)
Participation dummy	7.43	1.66	0.00	0.28	0.03	-1.21
	(11.47)	(15.25)	(15.76)	(0.46)	(0.04)	(1.01)
Year 2014 dummy	-0.91	-19.88	-22.13	-0.24	0.02	1.05
	(24.77)	(19.56)	(19.66)	(0.55)	(0.05)	(1.22)
Number of observations	182	179	179	165	179	170
DID-PSM matching						
Whole sample	25.9*	43.8**	45.8**	24.7	0.10**	0.04
	(15.5)	(19.8)	(20.7)	(62.1)	(0.05)	(0.06)
Number of observations	102	99	99	87	99	87
Excluding 4th batch participants	35.5*	53.4**	54.0**	-0.09	0.13*	-0.47
	(18.8)	(23.8)	(24.5)	(1.80)	(0.70)	(2.15)
Number of Observations	91	88	88	76	88	76

Note. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Figure 13 Confidence interval plots of basic business outcome indicators before and after training by participation status.



As indicated in Figure 13, all the major measures of business performance shows a significant improvement among the treatment group compared to the comparison group. The results in the figure are highly consistent with Table 18.

8.2 ICT in Micro and Small Enterprises

8.2.1 Descriptive Data

As noted earlier, based on sets of criteria, KAIZEN implementers carefully chose enterprises that would be offered In-Company Training (ICT). Entrepreneurs operating those selected enterprises did not decline the invitation to participate in the training. Training for MSEs was offered by both EKI-trained TVET instructors as well as instructors affiliated with TVET colleges but not directly trained by EKI. Tables 19 and 20 present clear evidence of selection. The mean value of the variables

by participation status is indicated in their respective columns and standard errors obtained from test of equality of means are provided in parenthesis.

Despite a range of criteria adopted to screen among candidate enterprises, Table 19 shows that participants and non-participants do not differ in many of the human capital characteristics, such as age, sex, labor market experience and risk and time preference. The major statistically discernible difference between the two groups appears to arise from levels of education attainment. Participants look to have attended higher levels of education and hence more number of years of schooling. More precisely, participants are more likely to have completed high school and appear to have strong background in technical and vocation training.

Table 19 Human capital characteristics of enterprise operators

	Participant	Non-Participant	Whole Sample
Personality Traits			
Age	38	39	38
		(1.74)	
Proportion male	84	78	81
		(0.08)	
Completed Level of Education (%)			
No Formal Schooling	3.5	4.0	3.7
		(0.04)	
Primary School	16	24	20
		(0.08)	
High School	21	46	33
		(0.09)***	
Vocational School	35	10	23
		(0.08)***	
University(College)	25	16	21
		(0.08)	
Years of Schooling	13	11	12
		(0.67)***	
Cognitive skills test score	2.73	3.06	2.88
		(0.25)	
Labor Market Experience			
% manufacturing experience (Yes=1)	63	50	57
		(0.09)	
Years of experience in the manufacturing sector	3.3	2.6	3.0
		(1.04)	
% trading experience (Yes=1)	23	26	24
		(0.08)	
Years of trading experience	0.4	0.8	0.6
		(0.35)	
% management experience (Yes=1)	32	48	39
		(0.09)*	
Years of prior management experience	1.0	1.0	1.0
		(0.44)	
Years of current management experience	6.6	7.0	6.8
		(1.09)	

	Participant	Non-Participant	Whole Sample
Social Attitude Indicators (%)			
Is more trusting (Yes=1)	30	28	29
		(0.09)	
Thinks that people are fair (Yes=1)	42	50	46
		(0.09)	
Thinks that people are helpful (Yes=1)	54	64	59
		(0.09)	
Risk preference (%)			
Risk averse	56	56	56
		(0.09)	
Risk taker	37	58	37
		(0.09)	
Risk neutral	5.3	2.0	3.7
		(0.04)	
Time preference (%)			
Strongly hyperbolic	8.8	4.0	6.5
		(0.05)	
Weakly hyperbolic	11	14	12
		(0.06)	
Patient now impatient in the future	11	14	12
		(0.06)	
Sample Size	57	50	107

Note. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 20 Enterprise characteristics by participation status

	Participant	Non-Participant	Whole Sample
Years of operation	8.8	6.5	7.7
		(1.19)**	
Number of plant	1.2	1.1	1.1
		(0.09)	
Sector composition of the sample (%)			
Food Processing	5.4	20	12.3
		(0.06)**	
Precast	5.4	18	11.3
		(0.06)**	
Leather and Footwear	3.6	4.0	3.8
		(0.04)	
Wood and Metal Work	79	52	66
		(0.09)***	
Textile and Garment	7.1	6.0	6.6
		(0.05)	
Construction	0.0	2.0	0.9
		(0.02)	
Proportion of VAT registered firms	58	46	52
		(0.09)	
Type of ownership (%)			
Domestic Private	68	56	63
		(0.09)	
Cooperative	30	44	36
		(0.09)	

	Participant	Non-Participant	Whole Sample
Accounting based measures of performance			
Sales revenue in thousands of birr	40	23	32
		(15.0)	
Value added in thousands of birr	12	11	11
		(3.97)	
Gross profit in thousands of birr	6.4	6.6	6.5
		(2.79)	
Profit capital ratio	0.4	0.4	0.4
		(0.40)	
Profit sales ratio	0.2	0.1	0.1
		(0.14)	
Labor productivity in thousands of birr	1.1	1.0	1.1
		(0.46)	
Capital productivity	0.7	0.6	0.7
		(0.59)	
Capital intensity	9.6	7.7	8.7
		(3.63)	
Sample size	56	50	106

Note. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Similarly, Table 20 shows that most enterprise-level characteristics are balanced across participants and non-participants groups. Firm age and sector appears to be the only variables that show statistically significant differences by participation status. All basic business performance and enterprise size indicators appear to be comparable prior to the training across the two groups as seen in the bottom panel of Table20.

Tables 19 and 20 suggests that participants are on average more educated, operate older enterprises and are more likely to be on the metal and wood working sector than the non-participants. In contrast, however, there appears to be no statistically significant difference in labor market experience, social attitude, and risk and time preferences in the baseline. Basic measures of enterprise performance, such as sales revenue, value added, profit and labor productivity, also appears to be comparable between participants and non-participants prior to the training.

The question that then arises would be whether the absence of difference in enterprise performance would preserve once the participant group receives the treatment; i.e. after the participants attend ICT. Table 21 presents non-parametric uncontrolled DID results of various business practice indictors, (intermediary outcomes) and their average values before and after the training, by participation status. The definition of each variable is provided in the earlier section as well in Annex3 and 4.

Prior to the training, participants and non-participants do not seem to differ much in housekeeping and business practice scores. After ICT, the values for most of these variables while have generally stagnated or slightly declined for the comparison group, they have mostly increased for the participant group. The effects, however, are measured with large standard errors and hence, except for the variable indicating product quality, DID values, although invariably assumed the hypothesized sign, are statistically insignificant.

Table 21 Business practice and quality measures by participation status

	Participant		Non-Participant		Change
	Before	After	Before	After	DID
	(1)	(2)	(3)	(4)	(5)
5S (housekeeping) and business practices					
Housekeeping score (maximum=12)	6.60	7.44	6.32	6.39	0.92
Waste elimination (*Muda*) (maximum=3)	2.38	2.16	2.66	2.56	-0.10
Raw material inspection (maximum==3)	1.77	1.51	2.04	1.56	0.24
Product quality inspection(maximum=7)	5.4	4.8	5.6	4.1	1.0***
% of defective products	7.5	6.7	7.0	8.5	-2.2
Sample Size	56	57	50	41	96

Note. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 22 shows average pre- and post-training values of basic enterprise performance indicators (accounting-based measures of performance) by participation status. As shown in the table participants have experienced significant improvements in sales revenue, value added, gross profit and employment. Monthly sales revenue, for example, has increased by more than 17,800 birr per month and profit by more than 8800 birr.

There are two plausible explanations for these. First, greater operational efficiency arising from implementing KAIZEN 5s practices and *Muda* elimination enables both cost reduction and greater production capacity. Higher production along with reduction in per unit production costs will have the combined effect of expanding the market size and the profit margin of existing products marketed by ICT enterprises. Second, as shown in Table 21, participants have noticeably improved the quality of their product. Quality conscious customers are often willing to pay higher prices for better quality products. As the result, enterprises that improve their product quality will receive better price (higher sales revenue for given quantity) and earn greater profit.

Table 22 Accounting based measure of performance

	Participant		Non-Participant		Change
	Before	After	Before	After	DID
	(1)	(2)	(3)	(4)	(5)
Sales revenue in thousands of birr	24	43	17	18	17.8**
Slack period sales revenue in thousands of birr	14	12	4.6	8.4	-5.60
Peak period sales revenue in thousands of birr	41	59	27	33	34*.0
Value added in thousands of birr	9.8	20	8.0	9.4	8.14**
Gross profit in thousands of birr	5.4	15	4.3	5.1	8.86**
Labor productivity in thousands of birr	1.13	1.58	1.01	0.70	0.76
Capital productivity	0.9	0.5	0.7	0.4	-0.2
Profit capital ratio	0.6	0.3	0.4	0.1	0.6
Average employment	13	14	15	13	2.8**
Capital stock	112.6	116.0	76.4	97.0	38.8
Capital labor ratio	9.5	15.3	8.8	8.5	6.1
Sample Size	55	56	50	41	96

Note. Sales value added and profit are measured on monthly basis., *** p<0.01, ** p<0.05, * p<0.1

Participation is also positively associated with larger value addition and employment. Labor productivity has also increased meaningfully although it is measured less precisely. In short, ICT participants have enjoyed greater enterprise performance measured using different dimensions.

8.2.2 Participation and Selection

Table 23 provides probit regression coefficients using the estimation of a host of explanatory variables on participation dummy (assumes 1 if the entrepreneur participated in KAIZEN training). Four separate specifications are formulated to check for the robustness of the results. The first column includes controls for social attitude, risk and time preference, business ownership, and sector of business.

Controls for social attitude includes variables capturing respondent's attitudes towards other people, such as trust in people, attitude towards people's fairness and altruism. Risk preference is based on hypothetical lottery game questions where the respondent is offered to choose between a sure outcome and a lottery game whose payoff has the same expected value. Time preference is based on eliciting present and future discount rates and extracting the nature of preferences from the discount rates. Controls for ownership and sectors encompass a battery of dummy variables that captures differences in ownership (sole proprietorship vs cooperative) and sub sectors (food-processing, precast, leather and footwear, wood and metalwork, textile and garment and construction). Value added is used to proxy size before training and gross profit captures profitability. A detailed definition of variables and their discussion is provided in Annex 3 and 4.

As seen in Table 23, the formal years of schooling, use of email and cognitive skill scores are the most important predictors of participation. The probability of participation increases by as much as 6% for each additional year of schooling of the entrepreneur. Although education was not explicitly employed as a screening criteria adopted by KAIZEN implementing team, more educated entrepreneurs are likely to fulfill some of the screening criteria more easily. For example, more educated entrepreneurs possibly show greater commitment and superior learning capacity giving them more edge over less educated ones in succeeding to participate in ICT. While educated entrepreneurs are more likely to recognize the value and usefulness of such kind of training beforehand, they are also open to experimenting with new ideas and technologies. Similarly, the probability of participation appears to be the highest among entrepreneurs who use email; probability ranging from 27% in column 1 to 34% in column 1. Including controls for personality trait and business characteristics do not affect the results. These results are highly consistent with Tables 19 and 20.

In contrast, however, entrepreneurs who score higher in cognitive tests including basic mathematics and graphical (Raven Matrix type) tests were less likely to participate. The marginal influence of cognitive skills on the participation decision of about 12% is higher than to that of the impact of the years of schooling by 6 percentage points. To the extent that schooling and cognitive ability are

positively correlated, one can assume their effect on participation to be in the same direction; i.e. positive in our data set. For some unknown reason, however, cognition appears to affect participation differently from schooling despite their positive correlation coefficient of about 0.16.

Columns 5 through 6 in Table 23 offer us an explicit look at the relationship between training participation and some measures of performance indicators. Once we control for education and cognitive skills, there is little evidence for the participation of large and profitable enterprises. A possible explanation is that entrepreneurs tended to come if they thought that the training would be useful in the future and those entrepreneurs who had expected their businesses to remain small in the future might have been less motivated to participate. Participants, even those from small operators during the training period, might have expected their businesses to grow.

Table 23 Probit model of ICT participation

VARIABLES	Participation					
	(1)	(2)	(3)	(4)	(5)	(6)
Years of schooling	0.15***	0.15***	0.15***	0.15***	0.15***	0.15***
	(0.05)	(0.05)	(0.05)	(0.04)	(0.04)	(0.05)
Years of operation	0.04	0.05*	0.05*	0.05*	0.05*	0.04
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Entrepreneur is male (Yes=1)	-0.48	0.10	0.09	0.09	0.09	-0.48
	(0.55)	(0.41)	(0.38)	(0.37)	(0.37)	(0.55)
Years of manufacturing experience	0.01	0.01	0.01	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Other training experience	0.39	0.28	0.25	0.24	0.23	0.39
	(0.35)	(0.32)	(0.32)	(0.31)	(0.31)	(0.35)
Use email (Yes=1)	0.73*	0.96**	0.90**	0.81**	0.80**	0.73*
	(0.42)	(0.40)	(0.39)	(0.37)	(0.37)	(0.42)
Number of workers before training	-0.01	-0.02	-0.02	-0.02	-0.02	-0.01
	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
Cognitive skills score	-0.27*	-0.30**	-0.31**	-0.30**	-0.31**	-0.27*
	(0.14)	(0.13)	(0.13)	(0.13)	(0.13)	(0.14)
Financial literacy score	0.07	0.10	0.10	0.07	0.07	0.07
	(0.16)	(0.15)	(0.15)	(0.14)	(0.14)	(0.16)
Controls for social attitude	Yes	Yes	Yes	No	No	No
Controls for risk preference	Yes	Yes	No	No	No	No
Controls for time preference	Yes	Yes	No	No	No	No
Controls for ownership	Yes	No	No	No	No	No
Controls for sector	Yes	No	No	No	No	No
Controls for pre-training size	No	No	No	No	Yes	No
Controls for pre-training profit	No	No	No	No	No	Yes
Constant	-1.89	-2.51**	-2.03**	-1.52*	-1.49*	-1.89
	(1.52)	(1.17)	(0.98)	(0.88)	(0.89)	(1.52)
Number of observations	104	105	105	105	105	105

Notes. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

8.2.3 *** p<0.01, ** p<0.05, * p<0.15S (Housekeeping) and Business Practices

Our theory of change hypothesize that the channel through which ICT affects business performance is through its effect on the management of the workshop, namely through its effect on housekeeping and business practices. Table 24 presents the uncontrolled DID values, random effect tobit and DID matching results. All the five dependent variables considered in the table are left-censored at zero (from below) and right-censored at certain positive number C (from above). In such cases, censored regssion models, such as two limit tobit, does better than simple linear regression methods in terms of yielding consistent estimators.

Similarly, given the identification strategy discussed in the methodology part, DID-PSM provides coefficients that are unbiased estimates of the Average Treatment Effect on the Treated (ATT). To avoid data mining, the random effect tobit formulation employs the same set of explanatory variables as in the probit regression presented in Table 22. The matching covariates employed under DID-PSM model are also based on the same set of variables.

The first row in Table 24 present the uncontrolled DID values, and are drawn from the descriptive Table 21. The figures presented in the rows indicating random-effect tobit models are the coefficient of the participation dummy interacted with the post-training participation year dummy.

Table 24 Panel data regression and matching estimates along with simple DID results on 5S, housekeeping and business practice indictors.

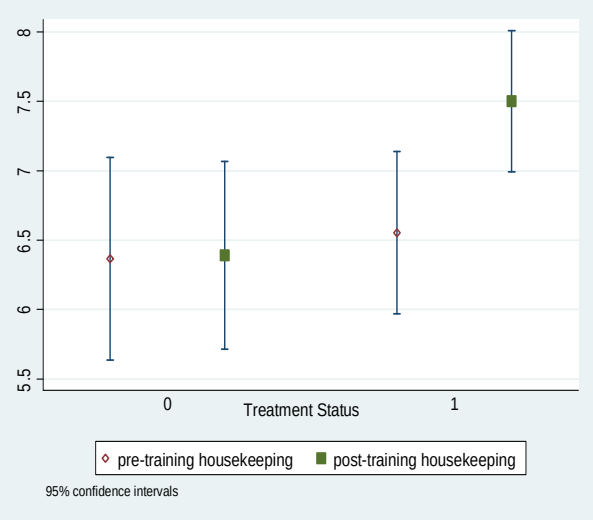
	Housekeeping	*Muda* (waste)	Raw material inspection	Product quality	% of defective products
	(1)	(2)	(3)	(4)	(5)
Uncontrolled DID	0.92	-0.10	0.24	1.00***	-2.2
Number of observations	96	96	96	96	96
Random Effect Tobit					
Participation dummy×	0.94**	-0.35**	0.25	1.20***	-0.91
Year 2014 dummy	(0.40)	(0.17)	(0.45)	(0.41)	(1.70)
Participation dummy	0.41	-0.22	-0.49	-0.81***	1.10
	(0.41)	(0.18)	(0.33)	(0.31)	(1.73)
Number of observations	194	194	194	194	194
DID-PSM matching	0.74	-0.28	0.58	1.28**	-0.55
	(0.86)	(0.26)	(0.43)	(0.57)	(4.69)
Number of observations	96	96	96	96	96

Note. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

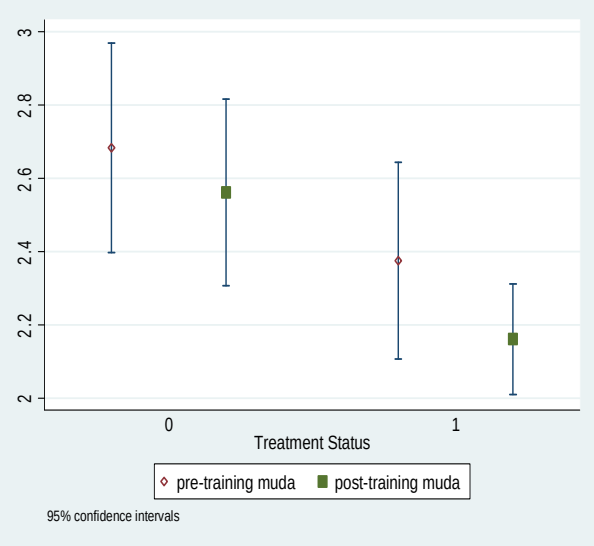
According to column 1 in Table24, training participants have significantly improved their housekeeping practices. The training taught entrepreneurs that the easiest way to cut costs is to properly implement 5S (five 'S') thoroughly. The effective applications of 5S practices enable enterprises solve their routine process related problems without a need for expensive and expansive investment in machines and equipment. Higher housekeeping score among participants imply that entrepreneurs who participated in ICT have cleaner, tidy and better organized workplaces than the comparison group.

Figure 14 Confidence interval plots of housekeeping and business practice scores before and after training by participation status.

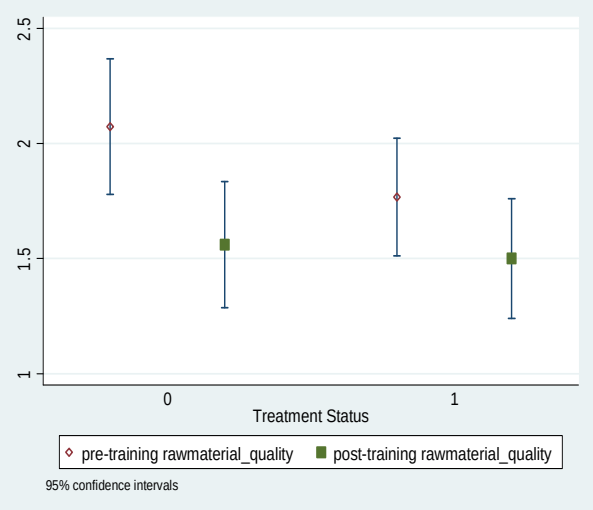
Housekeeping score



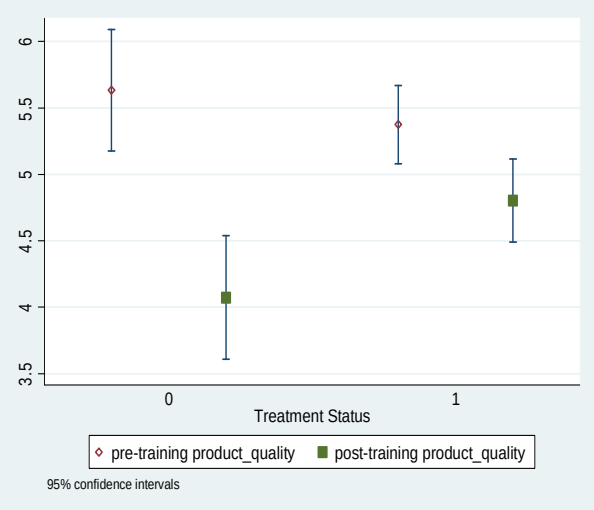
Muda (Waste)



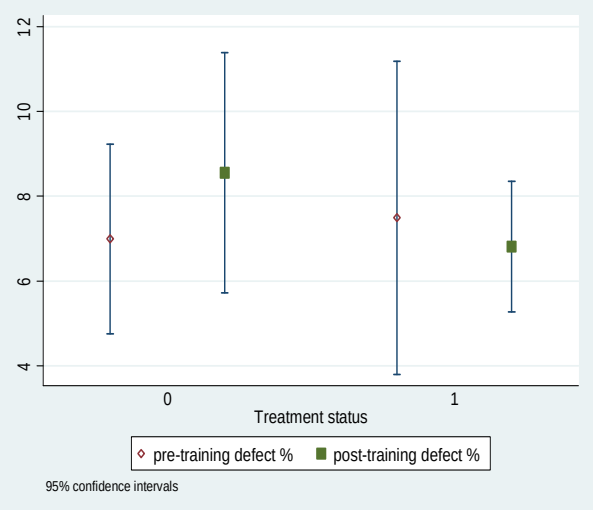
Raw Material Quality



Product quality



% of defective products



Elimination of waste is also complementary to 5S practices; i.e., clean and well-organized enterprises can easily help isolate value adding activities and materials from non-value adding ones. As shown in the table, *Muda* (waste) has significantly declined among the ICT participants. While the DID-PSM estimate is also negative, it is less precisely measured. Similarly, raw material quality inspection is positive although estimation is accompanied by large standard errors in both the parametric and non-parametric matching models.

Figure 14 is consistent with Table 24. Figure 14 in addition illustrates two important findings. First, it shows that participants have experienced greater improvements in measured business practices compared to non-participants. Save for raw material quality indicators, there appears to be significant change in most of the housekeeping and business practice indicators among the participant group. For example, in the post-training period, the confidence bands containing housekeeping scores of the participants has considerably shifted to the rightmost of the graph while it has barely increased for the comparison group suggesting a significant improvement for the participant group. Similarly, *Muda* (waste) elimination is positively correlated with participation status, declining more rapidly in the post-training period among the participant group than the comparison group.

Second, variability of business practices across the participants group seems to have declined after the training than the comparison group and the pre-training period; i.e., confidence intervals appear to be more condensed in the former group. ICT might have helped those enterprises that do not have basic knowledge of workplace management and housekeeping practices catch up fast with those that knew and practiced the basics previously.

8.2.4 Business Performance

We expect that the positive changes in the business practices and improvements in quality indicators would translate into gains in business performance. To measure performance, we employ accounting-based measures of performance, such as sales, value added and gross profit. In both the baseline and follow-up data sets, we have monthly values of these variables for two data points; i.e. two consecutive months immediately before each round of survey. We will use the average of the two consecutive months to construct two data points, one for the baseline and the other for the follow-up.

Theoretically, improvements in the management of workplace should lead to gains in productivity and profitability. Table 25 shows that participation is associated with positive and large coefficients for many of the enterprise performance indicators. In column 2, for example, ICT participation is associated with 13.42 percentage points increment in value added which amounts to more than 90% increase in pre-training value of value added for participants and nearly a one standard deviation unit increase in value added in the whole sample. The matching estimate is even larger.

Table 25 Panel data regression and matching estimates along with simple DID results on enterprise performance indicators.

	Sales	Value added	Gross profit	Value added per worker	Value added per capital	Profit capital ratio	Number of worker	Capital stock	Capital labor ratio
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Uncontrolled DID	17.8**	8.14**	8.86**	0.76	-0.20	0.60	2.80**	38.8	6.1
Number of observations	96	96	96	96	96	96	96	96	96
Fixed Effect									
Participation dummy	23.55	13.42*	12.68**	1.25*	-0.12	0.22	2.55	52.24	9.17
× Year 2014 dummy	(18.04)	(6.83)	(5.87)	(0.72)	(0.68)	(0.46)	(2.98)	(58.11)	(8.20)
Participation dummy	8.91	-2.50	-0.64	0.02	0.13	0.08	0.64	27.93	-1.26
	(13.68)	(5.18)	(4.43)	(0.53)	(0.51)	(0.35)	(2.26)	(44.29)	(6.22)
Number of observations	193	193	190	193	191	190	194	187	193
DID-PSM matching	65.4**	29.8**	28.0**	2.05*	-0.10	0.10	3.02**	40.9	2.47
	(31.9)	(14.0)	(12.0)	(1.06)	(0.39)	(0.54)	(1.47)	(80.1)	(11.7)
Number of observations	96	96	93	96	96	96	96	96	96

Notes. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

ICT participation is also positively and significantly related with enterprise productivity and profitability. As shown in columns 3 and 4, participation is associated with 12.7 and 1.25 percentage point increment in profitability and labor productivity respectively. The marginal effects of participation on both profitability and productivity are comparable to their respective pre-training means, suggesting that the increments are very large in magnitude. In plain terms, a typical participant has seen his profitability and productivity doubled as the result of ICT. These findings are robust to model selection or specification.

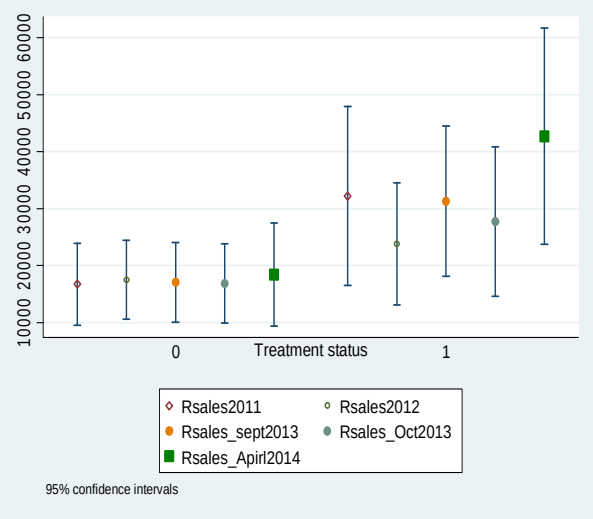
While there is also evidence that enterprises operated by entrepreneurs who participated in ICT have grown in size as indicated in column 7 of Table 25, the fixed effect estimation is accompanied by larger standard errors. More precisely, enterprises operated by participants have employed 3 more workers in the post-training period, which is nearly equivalent to a quarter of their average workforce prior to the training.

Figure 15 is highly consistent with the findings indicated in Table 25. As indicated in the figure, almost all business performance indicators, except number of workers, were higher for the participant group compared to the comparison group prior to the training. The difference, however, appears to have considerably expanded after the training. As seen in the figure, sales revenue, value added, profit and a measure of labor productivity stagnated for the comparison group and increased invariably for the treatment group.

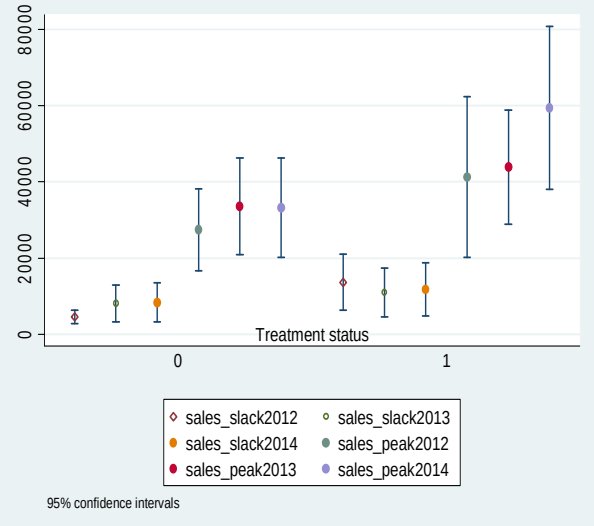
Number of workers, on the other hand, were much larger in the comparison group prior to the training but has significantly declined in the post-training period. In contrast, employment has significantly increased for participating enterprises in the post-training period.

Figure 15 Confidence interval plots of basic business outcome indicators before and after training by participation status.

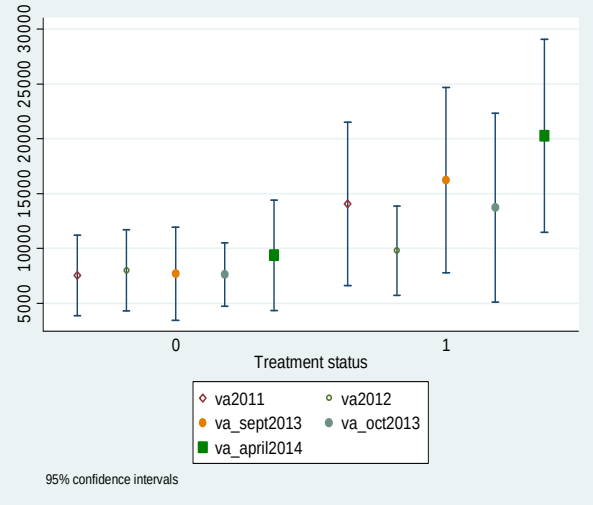
Total sales Revenue



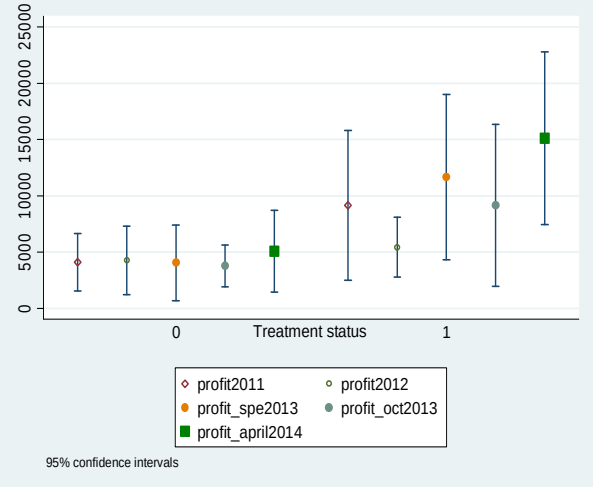
Sales in peak and slack periods



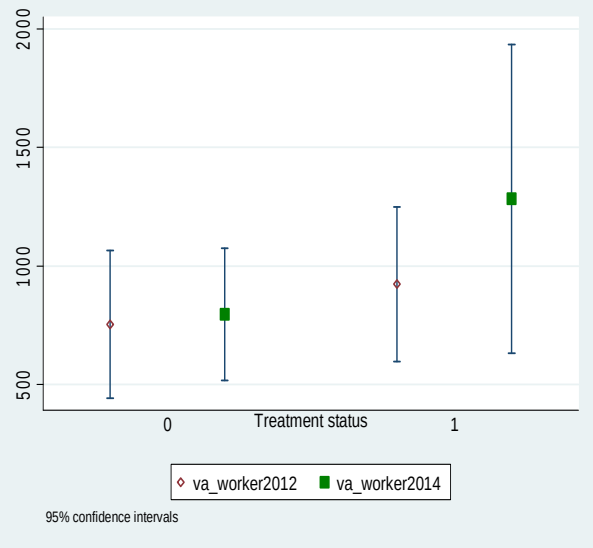
Value added



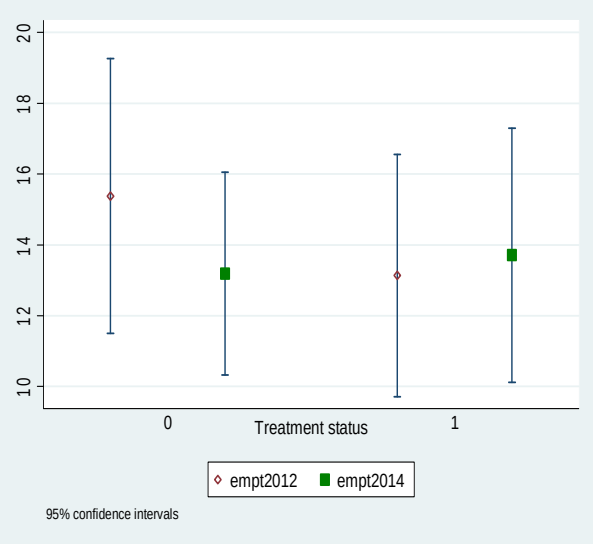
Gross Profit



Labor productivity



Number of workers



9 Summary

The structural transformation of low income economies is inextricably linked with the performance of the manufacturing sector. As in many sub-Saharan African countries, the performance of the manufacturing sector has not been in par with its potentials in Ethiopia. A wide range of problems that cut across many facets of business appear to bedevil the sector. Studies, for example, show that access to finance, poor trade in logistics and input shortages underlie the monotonous performance of the manufacturing sector in Ethiopia. To induce greater productivity and encourage entry into the sector, improving the business environment and external conditions facing enterprises, however, may not be sufficient. For example, while enterprises in the manufacturing sector can be important sources of employment for many unskilled and semi-skilled labor forces in developing countries, they are often operated by entrepreneurs with limited production and managerial knowhow, and hence their appears to be significant scope for improving their performance. Such improvements need to be complemented with the acquisition of knowledge that enhances the internal capabilities of manufacturing enterprises.

The international transfer of production and management knowledge to local enterprises is increasingly considered as an important area of intervention to engender greater competitiveness and productivity. One such intervention that is proven to have worked elsewhere is KAIZEN, a low cost common sense approach to management.

The Ethiopian government has been keen to introduce and disseminate KAIZEN knowledge in the manufacturing sector. To this effect, the government of Ethiopia established the Ethiopian KAIZEN Institute (EKI) on October 2011. Following the setting up of EKI and in collaboration with the Japanese government, a project called "Project on Capacity Building for Dissemination of Quality and Productivity Improvement (KAIZEN)" was launched. The main of the project was to establish a system whereby KAIZEN knowledge would be disseminated to Large and Medium as well as Micro and Small enterprises in Ethiopia. The project had three major components: (a) building EKI's in-house training and expertise capacity, (b) disseminating KAIZEN to large and medium enterprises (LMEs) relying mainly on EKI's in-house expertise, (c) disseminating KAIZEN to micro and small enterprise (MSEs) operators using trainer from Technical and Vocational Education and Training (TVET) colleges who in turn acquires KAIZEN knowledge from EKI trainers.

This paper carried out an empirical evaluation of the latter two components of the project. More precisely, we explored the effectiveness of the In-Company Training program that was offered on-site consultation services to operators of both LMEs and MSEs. We hypothesize that lack of basic housekeeping and related business practices leads to suboptimal utilization of resources, which often result from lack of knowledge of or access to better enterprise management practices. Incremental interventions, such as KAIZEN ICT, will have higher take up and provides knowledge that will have positive effects on: (1) intermediary outcomes such as housekeeping, waste reduction and process and product quality improvements; (2) enterprise performance measure such as profitability, productivity and enterprise size.

This paper evaluated the impact of teaching KAIZEN, a low-cost common sense approach to management, to both LMEs and MSEs operators in and around Addis Ababa, Ethiopia. We collected baseline data from 118 (107) enterprises and follow-up data from 109 (96) LMEs (MSEs). In between the two surveys, there was In-Company Training (ICT) offered by EKI for 47 LMEs and by EKI-trained TVET instructors to 57 MSEs active in different sector. There are other enterprises in our sample that never received the training and are treated as comparison group firms in the analysis.

From our data we find that enterprises operated by ICT participants have improved their raw material procurement policies as well as process and product quality inspection systems. Better housekeeping practices, reduction in waste and the systematic utilization of raw material, process and product inspection instructions have led to a significant improvement in product quality, particularly in the MSEs sample.

The fact that KAIZEN instructors were able to closely monitor production process, inventory and labor management practices of participating enterprises enabled defter understanding of workplace problems and their inexpensive solutions. For example, entrepreneurs were taught how to better organize their workplace and to easily spot waste and excessively costing inventory. ICT participants have thus enjoyed greater value addition, cost reductions, higher labor productivity and profitability compared to group of enterprises run by entrepreneurs who did not participant in ICT. In this sense, KAIZEN is leaving up to its name of being an inexpensive and easy to implement way of running and improving ones enterprises.

ANNEX

Annex 1. Criteria for Selecting Enterprises to Participate in Training

	Common Items to LMEs and MSEs
1	Balanced sub-sectors that enable diverse and efficient implementation to be secured are selected.
2	The enterprise does not receive support from other donors and is not implementing business process reengineering or benchmarking
3	The enterprise owners or top managements have interest in KAIZEN and are willing to introduce it.
4	The enterprise has consented to provide data for utilization in the monitoring and evaluation of KAIZEN implementation
5	The enterprise has no relation to the military sector.
6	The enterprise is willing to bear some of the costs of KAIZEN implementation.
	LMEs Items
1	The enterprise belongs to GTP priority sub-sector.
2	The enterprise belongs to the private sector.
3	The enterprise is in the manufacturing sector
4	The enterprise is in or around Addis Ababa.
5	The enterprise is formal.
6	The enterprise side can organize a KAIZEN team or assign full-time staff.
7	There is room for improvement in quality and productivity and there is a high possibility that a KAIZEN effect can be raised during the training period.
8	The issues tackled in KAIZE N are different.
9	The category business is dispersed.
	MSEs Items
1	The enterprise belongs to priority sub-sector for new MSE development strategy.
2	The selection gives consideration to balance between the target areas.
3	The enterprise belongs to the private sector.
4	The enterprise is in the manufacturing sector (other sectors may be selected according to the needs of the local area).
5	The enterprise is within 20 km of the target CRC.
6	The enterprise is officially registered.
7	It is a small enterprise according to the definition given in the new MSE development strategy.
8	The enterprise owners or top management become fully devoted to KAIZEN.
9	It can be amply anticipated that effect can be had through applying basic KAIZEN technologies.
10	The category of business is dispersed.

Source: EKI and JDS Work Plan (2012)

Annex 2. Size classification of enterprises

Enterprise Type	Sector	Employment	Total Asset (capital)
Micro	Industry	≤5	≤100,000 birr
	Service	≤5	≤50,000 birr
Small	Industry	6 up to 30	≤1.5 million birr
	Service	6 up to 30	≤500,000 birr

Source: Federal Micro and Small Enterprise Development Strategy, provision framework and methods of Implementation, 2011.

Annex 3. Questions employed to capture social attitude, risk and time preferences in both the LMEs and MSEs survey

Personality traits	
Controls for social attitude (Yes=1)	1. Trust question: most people can be trusted 2. Fairness question: most people would try to be fair 3. Helpful (Altruism) question: most of the time people try to be helpful
Risk preference	1. Attitude towards risk in general. How do you see yourself: Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks? 2. Lottery Game: You were offered a choice between receiving 2000 birr for certain or playing a lottery that paid 4000 birr with probability 0.5 and 0 birr (nothing) with probability 0.5. Which offer would you accept? _____ 1. The first option 2. The lottery game 3. Either is fine
Time preference	1. Suppose that someone offers you either 1000 birr tomorrow or a higher amount one month later. You are asked to choose between the following pairs. Which would you prefer? (a) A. 1000 birr tomorrow B. 1025 birr one month (b) A. 1000 birr tomorrow B. 1050 birr one month (c) A. 1000 birr tomorrow B. 1100 birr one month (d) A. 1000 birr tomorrow B. 1150 birr one month (e) A. 1000 birr tomorrow B. 1200 birr one month (f) A. 1000 birr tomorrow B. 1250 birr one month (g) A. 1000 birr tomorrow B. More than 1250 birr one month 2. Suppose that someone offers you either 1000 birr one month later or a higher amount two months later. You are asked to choose between the pairs indicated above. Which would you prefer?

Annex 4. Questions employed to solicit 5S, housekeeping and business practices of LMEs and MSEs.

Aggregated variable	Details
Housekeeping	All types of raw materials are stored in their own designated areas
	Enterprise do not keep raw materials that have not been used for a year or more in the workplace
	Enterprise clearly demarcates corridors and work areas
	Enterprise does not place items that are used infrequently in the work area
	Enterprise cleans workshop regularly after work
	Cleaning implements are stored in their own designated places inside work areas
	The same materials are always put together in one space
	There is a fixed place for keeping tool, jig and die
	Machine and equipment are checked and cleaned after work every day
	There is no (low) inventory of products that were manufactured one month or more ago
	There is no (low) inventory of parts and work in progress that were processed one month or more ago
	There is a separate designated store for keeping work in progress between different processes
Measures	Average duration of each production activity is measured
	The necessary work time is accurately estimated according to the work volume
Labor Management	Machine operators do not perform other tasks in addition to monitoring the machines during machine operations
	Workers are encouraged to be multi-skilled
	Differences in productivity between production workers is known
Muda (waste)	There are regular cases where certain processes are overworked and other processes are left idle
	There are occasional cases where certain processes are overworked and other processes are left idle
	There are regular machines breaks or other impediments to the process control
	There are occasional machines breaks or other impediments to the process control
	Machines are not properly arranged in line with the flow of work
	Machines are kept far apart hindering process flow
Raw material quality	Always sample raw materials before procurement from new suppliers
	For all raw materials procurements, the enterprise has established quality requirements (or buying specifications)
	The qualities of raw materials are checked whenever materials arrive before acceptance into your stores
Product quality	For each product the enterprise produces, there are always product specifications set by either the enterprise or its clients
	There is regular inspection of the first pieces (output) of each production run (batches)
	In-process inspection of products is done on daily basis
	In-process inspection of products is done on weekly basis
	There is inspection instructions or manuals that lay down the details of the tests to be carried out
	There is daily inspection of the quality of product before shipping them to customers
	There is weekly inspection of the quality of product before shipping them to customers
	There are inspection instructions or manuals that lay down the details of the tests to be carried out on the final product just before shipment.
% defect	On average, percentage of final products having some defects
Issue warranty	Firms that provide any document or certificate for quality assurance or warranty for customers buying their products

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Appendix 12: PDM (Vers. Draft 1, 1.0 and 2.0)

Project Design Matrix (PDM)

Project Title: Project on Capacity Building for Dissemination of Quality and Productivity Improvement (KAIZEN)
Project Period: November 2011-October 2014 (36 months)
Target Area: All over Ethiopia (The major part of the activities for LMEs and MSEs is to be undertaken in Addis Ababa and its vicinity, and a part of the activities for MSEs including classroom and in-company training is to be undertaken in designated areas of Addis Ababa, Oromia, Amhara, Tigray, and SNNPR on visiting basis.)[7]
Target Group: Ethiopian KAIZEN Institute (EKI) staff members including EKI Consultants[8], TVET Trainers' Trainers (TTTs)[9] of Cluster Resource Centres (CRCs), private enterprises which participate in in-company training.

Ver No: Draft 1

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Super Goal[10] Quality and productivity of the Ethiopian private sector will be improved.			
Overall Goal An increased number of private enterprises will implement quality and productivity improvement (KAIZEN).	1) XX% of private enterprises implementing quality and productivity improvement (KAIZEN) 2) XX% of the respondents who answers that quality and productivity improvement (KAIZEN) is effective	1) Questionnaire survey in selected areas 2) Questionnaire survey in selected areas or surveys at the chambers of commerce and sectoral associations	- Economic situation in Ethiopia does not deteriorate drastically.
Project Purpose The system is established to disseminate quality and productivity improvement (KAIZEN) to private enterprises in a sustainable manner.	1) XX qualified EKI Consultants 2) XX qualified TTTs 3) XX times of training cycle completed for EKI Consultants 4) XX times of training cycle completed for TTTs 5) XX% of enterprises participated in in-company trainings answers the results of consulting services as satisfactory 6) Accumulation of good practices of participating enterprises as model cases	1)~4) EKI records of activities 5) Client feedback reports 6) EKI reports	- The Government policy regarding quality and productivity improvement (KAIZEN) does not change drastically. - The business environment for Ethiopian private enterprises does not deteriorate drastically.
Outputs 1 The institutional and organisational foundation of Ethiopian KAIZEN Institute (EKI) is established as the core and lead organisation for the dissemination of quality and productivity improvement (KAIZEN).	1) Short- and long-term plans for KAIZEN dissemination in place 2) XX meetings held with relevant organisations 3) Monitoring and annual evaluation reports on progress of KAIZEN implementation and achievement 4) XX attendants of KAIZEN seminars	1) EKI short- and long-term plans and periodical activity reports 2) EKI reports of activities 3) Monitoring and annual evaluation reports 4) EKI reports of activities	- EKI Consultants will not leave the position or will not be moved to other entities. - Current structure in which TTTs provide training of trainers (TOT) to TVET teachers in CRCs is maintained. - Industrial Extension Services for MSEs is undertaken continuously in Ethiopia.
2 The system of human resource development for dissemination of quality and productivity improvement (KAIZEN) to large and medium enterprises (LMEs) is functionalised in EKI.	1) EKI Consultants' training curriculum in use 2) Course materials including customised KAIZEN Manuals for EKI Consultants 3) The criteria and methodology to assess skill level of EKI Consultants in place 4) XX LMEs participated in in-company training	1) EKI Consultants' training curriculum 2) EKI Consultants' course materials 3) EKI Consultant's assessment guideline 4) EKI reports of activities	
3 The model system for EKI to foster TVET Trainers' Trainers (TTTs) is developed for quality and productivity improvement (KAIZEN) for micro and small enterprises (MSEs).	1) TTTs' training curriculum in use 2) Course materials including customised KAIZEN Manuals for TTTs 3) The criteria and methodology to assess skill level of TTTs in place 4) TTTs' training guideline shared with FeTA and ReTAs 5) XX MSEs participated in in-company training	1) TTTs' training curriculum 2) TTTs' course materials 3) TTTs' assessment guideline 4) TTTs' training guideline and EKI reports of activities 5) EKI reports of activities	

[7] The limited number of medium enterprises newly graduated from the status of MSE can be selected as participating enterprises for the TTTs' in-company training.
[8] "EKI Consultant" refers to a staff member of EKI who is engaged in the dissemination of quality and productivity improvement (KAIZEN).
[9] Those TVET trainers who are trained and perform the function to transfer the skill of disseminating quality and productivity improvement (KAIZEN) to other TVET trainers shall be referred to TVET trainers' trainers (TTTs).
[10] The level of achievement of the Super Goal which indicates the direction of the Project will not be evaluated in the Project.

<Note>
- The actual target figures (some of them are presented as XX) of Objectively Verifiable Indicators are to be decided approximately six (6) months after the commencement of the Project, when the actual situation of EKI, in particular its actual budget and personnel allocation, as well as technical details, is considered to become clear.

Activities		Inputs		Important Assumptions
1-1	Based on the discussion between relevant organisations and agencies, EKI develops short- and long-term KAIZEN dissemination plans and institutional frameworks including necessary budget, human resource allocation, business plans and service structure.	<Ethiopian Side> [C/P personnel] - Project Director - Project Manager - EKI staff members - EKI support service staff including secretary(s), driver(s), accountant(s) - Any other staff if necessary [Facility] - Office space and necessary facilities for the Japanese experts and C/P - Necessary office equipment for the Japanese experts and C/P - Meeting rooms and training venues [Local costs] - The salary and remuneration, travel expenses and daily allowances of C/P, TTTs and other necessary personnel - Maintenance expenditure of facilities and equipment - Utility costs - Fuel and maintenance expenses for project vehicles - Other necessary administrative expenses	<Japanese Side> [Japanese experts] - Chief Advisor/Institutional Development(1) - Inter-Agency Coordination / Dissemination Facilitation(1) - Quality and Productivity Improvement(4) - Activity Coordination(1) - Other necessary short-term expert(s) [Machinery and equipment] - Project vehicle (3) -Other equipment [Training for C/P] - Training in Japan - Training in the third-countries	- Necessary cooperation framework between ministries (MoI, Ministry of Urban Development and Construction (MoUDC), and Ministry of Education (MoE)) and agencies (including FeTA, ReTAs, FeMSEDA and ReMSEDAs) is maintained. Pre-conditions EKI is established and inaugurated officially with physical presence including personnel and budget allocation. Details of necessary cooperation framework between ministries and agencies are agreed.
1-2	EKI establishes a network with relevant organisations including the private sector for quality and productivity improvement (KAIZEN).			
1-3	EKI evaluates the effectiveness of quality and productivity improvement (KAIZEN) to the enterprises which participate in in-company training.			
1-4	EKI carries out necessary publicity activities including seminars to promote quality and productivity improvement (KAIZEN) and reviews the current situation and direction for awareness building including the awarding system.			
2-1	EKI formulates the training plan for EKI Consultants.			
2-2	EKI develops the training curriculum for EKI Consultants.			
2-3	EKI develops course materials of the training for EKI Consultants (including the customisation of KAIZEN Manual based on various needs of specific sub-sectors and the translation into Amharic).			
2-4	EKI establishes the criteria and methodology to assess skill levels of EKI Consultants and undertakes initial assessment.			
2-5	EKI establishes the selection criteria and methodology, and selects LMEs which participate in in-company training in collaboration with the institutes and directorates of the Ministry of Industry (MoI).			
2-6	EKI conducts classroom training for EKI Consultants.			
2-7	EKI conducts in-company training for EKI Consultants.			
2-8	EKI undertakes periodical evaluations of the achievement levels of EKI Consultants.			
2-9	EKI monitors and evaluates the results of the activities from 2-1 to 2-8.			
3-1	EKI formulates the plan of model training for TTTs and selects regions and Cluster Resource Centres (CRCs) based on consultation with Federal TVET Agency (FeTA) and Regional TVET Agencies (ReTAs).			
3-2	EKI develops the training curriculum for TTTs.			
3-3	EKI develops the course materials of training for TTTs (including the customisation of KAIZEN Manual for MSEs and the translation into Amharic) .			
3-4	EKI establishes the methodology to assess skill levels of TTTs and sets the selection criteria of training participants with the support of FeTA.			
3-5	EKI selects training participants and undertakes initial assessment in collaboration with ReTAs.			
3-6	EKI establishes the selection criteria and methodology to select MSEs which participate in in-company trainings with the support of Federal MSE Development Agency (FeMSEDA).			
3-7	EKI selects MSEs which participate in in-company training in collaboration with Regional MSE Development Agencies (ReMSEDAs).			
3-8	EKI conducts classroom training for TTTs.			
3-9	EKI conducts in-company training for TTTs.			
3-10	EKI evaluates the achievement levels of trained TTTs.			
3-11	EKI monitors and evaluates the results of the activities from 3-1 to 3-10, and develops the TTTs' training guideline to share with FeTA and ReTAs.			

Project Design Matrix (PDM)

Project Title: Project on Capacity Building for Dissemination of Quality and Productivity Improvement (KAIZEN)
Project Period: November 2011-October 2014 (36 months)
Target Area: All over Ethiopia (**Addis Ababa, Oromia, Amhara, Tigray, SNNPR, Harar and Dire Dawa, but the major part of the activities for LMEs and MSEs is to be undertaken in Addis Ababa and its vicinity.**)[11]
Target Group: Ethiopian KAIZEN Institute (EKI) staff members including EKI Consultants[12], TVET Trainers' Trainers (TTTs)[13], private enterprises which participate in in-company training.

Ver. no: PDM1.0

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Super Goal[14] Quality and productivity of the Ethiopian private sector will be improved.			
Overall Goal An increased number of private enterprises will implement quality and productivity improvement (KAIZEN).	1) **5%** of private enterprises implementing KAIZEN 2) **75%** of the **enterprises implementing KAIZEN** answer that KAIZEN is effective.	1) Questionnaire survey in selected areas 2) Questionnaire survey in selected areas or surveys at the chambers of commerce and sectoral associations	- Economic situation in Ethiopia does not deteriorate drastically.
Project Purpose The system is established to disseminate quality and productivity improvement (KAIZEN) to private enterprises in a sustainable manner.	1) **60** qualified EKI Consultants 2) **170** qualified TTTs 3) **5** times of training **batch** completed for EKI Consultants 4) **8** times of training **batch** completed for TTTs 5) **75%** of enterprises participated in in-company trainings answer the results of consulting services as satisfactory 6) Accumulation of good practices of participating enterprises as model cases	1)~4) EKI records of activities 5) Client feedback reports 6) EKI reports	- The Government policy regarding quality and productivity improvement (KAIZEN) does not change drastically. - The business environment for Ethiopian private enterprises does not deteriorate drastically.
Outputs 1 The institutional and organisational foundation of Ethiopian KAIZEN Institute (EKI) is established as the core and lead organisation for the dissemination of quality and productivity improvement (KAIZEN).	1) Short- and long-term plans for KAIZEN dissemination in place 2) **20** meetings held with relevant organizations. 3) Monitoring and annual evaluation reports on progress of KAIZEN implementation and achievement 4) **600** attendants of KAIZEN seminars	1) EKI short- and long-term plans and periodical activity reports 2) EKI reports of activities 3) Monitoring and annual evaluation reports 4) EKI reports of activities	- EKI Consultants will not leave the position or will not be moved to other entities. - Current structure in which TTTs provide training of trainers (TOT) to TVET teachers is maintained. - Industrial Extension Services for MSEs is undertaken continuously in Ethiopia.
2 The system of human resource development for dissemination of quality and productivity improvement (KAIZEN) to large and medium enterprises (LMEs) is functionalised in EKI.	1) EKI Consultants' training curriculum in use 2) Course materials including customised KAIZEN Manuals for EKI Consultants 3) The criteria and methodology to assess skill level of EKI Consultants in place 4) **50** LMEs participated in in-company training	1) EKI Consultants' training curriculum 2) EKI Consultants' course materials 3) EKI Consultant's assessment guideline 4) EKI reports of activities	
3 The model system for EKI to foster TVET Trainers' Trainers (TTTs) is developed for quality and productivity improvement (KAIZEN) for micro and small enterprises (MSEs).	1) TTTs' training curriculum in use 2) Course materials including customised KAIZEN Manuals for TTTs 3) The criteria and methodology to assess skill level of TTTs in place 4) TTTs' training guideline shared with FeTA and ReTAs 5) **170** MSEs participated in in-company training	1) TTTs' training curriculum 2) TTTs' course materials 3) TTTs' assessment guideline 4) TTTs' training guideline and EKI reports of activities 5) EKI reports of activities	

[11] The limited number of medium enterprises newly graduated from the status of MSE can be selected as participating enterprises for the TTTs' in-company training.
[12] "EKI Consultant" refers to a staff member of EKI who is engaged in the dissemination of quality and productivity improvement (KAIZEN).
[13] Those TVET trainers who are trained and perform the function to transfer the skill of disseminating quality and productivity improvement (KAIZEN) to other TVET trainers shall be referred to TVET trainers' trainers (TTTs).
[14] The level of achievement of the Super Goal which indicates the direction of the Project will not be evaluated in the Project.

Activities		Inputs		Important Assumptions
1-1	Based on the discussion between relevant organisations and agencies, EKI develops short- and long-term KAIZEN dissemination plans and institutional frameworks including necessary budget, human resource allocation, business plans and service structure.	<Ethiopian Side> [C/P personnel] - Project Director - Project Manager - EKI staff members - EKI support service staff including secretary(s), driver(s), accountant(s) - Any other staff if necessary [Facility] - Office space and necessary facilities for the Japanese experts and C/P - Necessary office equipment for the Japanese experts and C/P - Meeting rooms and training venues [Local costs] - The salary and remuneration, travel expenses and daily allowances of C/P, TTTs and other necessary personnel - Maintenance expenditure of facilities and equipment - Utility costs - Fuel and maintenance expenses for project vehicles - Other necessary administrative expenses	<Japanese Side> [Japanese experts] - Chief Advisor/Institutional Development(1) - Inter-Agency Coordination / Dissemination Facilitation(1) - Quality and Productivity Improvement(**6**) - Activity Coordination(1) - Other necessary short-term expert(s) [Machinery and equipment] - Project vehicle (3) -Other equipment [Training for C/P] - Training in Japan - Training in the third-countries	- Necessary cooperation framework between ministries (MoI, Ministry of Urban Development and Construction (MoUDC), and Ministry of Education (MoE)) and agencies (including FeTA, ReTAs, FeMSEDA and ReMSEDAs) is maintained. Pre-conditions EKI is established and inaugurated officially with physical presence including personnel and budget allocation. Details of necessary cooperation framework between ministries and agencies are agreed.
1-2	EKI establishes a network with relevant organisations including the private sector for quality and productivity improvement (KAIZEN).			
1-3	EKI evaluates the effectiveness of quality and productivity improvement (KAIZEN) to the enterprises which participate in in-company training.			
1-4	EKI carries out necessary publicity activities including seminars to promote quality and productivity improvement (KAIZEN) and reviews the current situation and direction for awareness building including the awarding system.			
2-1	EKI formulates the training plan for EKI Consultants.			
2-2	EKI develops the training curriculum for EKI Consultants.			
2-3	EKI develops course materials of the training for EKI Consultants (including the customisation of KAIZEN Manual based on various needs of specific sub-sectors and the translation into Amharic).			
2-4	EKI establishes the criteria and methodology to assess skill levels of EKI Consultants and undertakes initial assessment.			
2-5	EKI establishes the selection criteria and methodology, and selects LMEs which participate in in-company training in collaboration with the institutes and directorates of the Ministry of Industry (MoI).			
2-6	EKI conducts classroom training for EKI Consultants.			
2-7	EKI conducts in-company training for EKI Consultants.			
2-8	EKI undertakes periodical evaluations of the achievement levels of EKI Consultants.			
2-9	EKI monitors and evaluates the results of the activities from 2-1 to 2-8.			
3-1	**EKI formulates the plan of model training for TTTs based on consultation with Federal TVET Agency (FeTA) and Regional TVET Agencies (ReTAs).**			
3-2	EKI develops the training curriculum for TTTs.			
3-3	EKI develops the course materials of training for TTTs (including the customisation of KAIZEN Manual for MSEs and the translation into Amharic).			
3-4	EKI establishes the methodology to assess skill levels of TTTs and sets the selection criteria of training participants with the support of FeTA.			
3-5	EKI selects training participants and undertakes initial assessment in collaboration with ReTAs.			
3-6	EKI establishes the selection criteria and methodology to select MSEs which participate in in-company trainings with the support of Federal MSE Development Agency (FeMSEDA).			
3-7	EKI selects MSEs which participate in in-company training in collaboration with Regional MSE Development Agencies (ReMSEDAs).			
3-8	EKI conducts classroom training for TTTs.			
3-9	EKI conducts in-company training for TTTs.			
3-10	EKI evaluates the achievement levels of trained TTTs.			
3-11	EKI monitors and evaluates the results of the activities from 3-1 to 3-10, and develops the TTTs' training guideline to share with FeTA and ReTAs.			

Project Design Matrix (PDM)

Project Title : Project on Capacity Building for Dissemination of Quality and Productivity Improvement (KAIZEN)
Project Period : November 2011-October 2014 (36 months)
Target Area : All over Ethiopia (the major part of the activities for LMEs and MSEs is to be undertaken in Addis Ababa and its vicinity.)[15]
Target Group : Ethiopian KAIZEN Institute (EKI) staff members including EKI Consultants[16], TVET Trainers' Trainers (TTTs)[17], private enterprises which participate in in-company training.

Ver. no: PDM2.0 (revised on 24 July, 2013)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Super Goal[18] Quality and productivity of the Ethiopian private sector will be improved.			
Overall Goal An increased number of private enterprises will implement quality and productivity improvement (KAIZEN).	1) 5% of private enterprises implementing KAIZEN	1) Questionnaire survey	- Economic situation in Ethiopia does not deteriorate drastically.
Project Purpose The system is established to disseminate quality and productivity improvement (KAIZEN) to private enterprises in a sustainable manner.	1) 60 professionally trained EKI Consultants 2) 170 professionally trained TTTs 3) The system to disseminate quality and productivity improvement (KAIZEN) is clearly described in long-term KAIZEN dissemination plan. 4) 75% of enterprises participated in in-company trainings answer the results of consulting services as satisfactory 5) Accumulation of good practices of participating enterprises as model cases	1)~3) EKI records of activities 4) Client feedback reports 5) EKI reports	- The Government policy regarding quality and productivity improvement (KAIZEN) does not change drastically. - The business environment for Ethiopian private enterprises does not deteriorate drastically.
Outputs 1 The institutional and organisational foundation of Ethiopian KAIZEN Institute (EKI) is established as the core and lead organisation for the dissemination of quality and productivity improvement (KAIZEN).	1) Short- and long-term plans for KAIZEN dissemination in place 2) Monitoring and annual evaluation reports on progress of KAIZEN implementation and achievement 3) 600 attendants of KAIZEN seminars	1) EKI short- and long-term plans and periodical activity reports 2) Monitoring and annual evaluation reports 3) EKI reports of activities	- EKI Consultants will not leave the position or will not be moved to other entities. - Current structure in which TTTs provide training of trainers (TOT) to TVET teachers is maintained. - Industrial Extension Services for MSEs is undertaken continuously in Ethiopia.
2 The system of human resource development for dissemination of quality and productivity improvement (KAIZEN) to large and medium enterprises (LMEs) is functionalised in EKI.	1) EKI Consultants' training curriculum in use 2) Course materials including customised KAIZEN Manuals for EKI Consultants 3) The criteria and methodology to assess skill level of EKI Consultants in place 4) 50 LMEs participated in in-company training	1) EKI Consultants' training curriculum 2) EKI Consultants' course materials 3) EKI Consultant's assessment guideline 4) EKI reports of activities	
3 The model system for EKI to foster TVET Trainers' Trainers (TTTs) is developed for quality and productivity improvement (KAIZEN) for micro and small enterprises (MSEs).	1) TTTs' training curriculum in use 2) Course materials including customised KAIZEN Manuals for TTTs 3) The criteria and methodology to assess skill level of TTTs in place 4) TTTs' training guideline shared with FeTA and ReTAs 5) 170 MSEs and TVETs participated in in-company training	1) TTTs' training curriculum 2) TTTs' course materials 3) TTTs' assessment guideline 4) TTTs' training guideline and EKI reports of activities 5) EKI reports of activities	

[15] The limited number of medium enterprises newly graduated from the status of MSE can be selected as participating enterprises for the TTTs' in-company training.
[16] "EKI Consultant" refers to a staff member of EKI who is engaged in the dissemination of quality and productivity improvement (KAIZEN).
[17] Those TVET trainers who are trained and perform the function to transfer the skill of disseminating quality and productivity improvement (KAIZEN) to other TVET trainers shall be referred to TVET trainers' trainers (TTTs).
[18] The level of achievement of the Super Goal which indicates the direction of the Project will not be evaluated in the Project.

Activities		Inputs		Important Assumptions
1-1	Based on the discussion between relevant organisations and agencies, EKI develops short- and long-term KAIZEN dissemination plans and institutional frameworks including necessary budget, human resource allocation, business plans and service structure.	<Ethiopian Side> [C/P personnel] - Project Director - Project Manager - EKI staff members - EKI support service staff including secretary(s), driver(s), accountant(s) - Any other staff if necessary [Facility] - Office space and necessary facilities for the Japanese experts and C/P - Necessary office equipment for the Japanese experts and C/P - Meeting rooms and training venues [Local costs] - The salary and remuneration, travel expenses and daily allowances of C/P, TTTs and other necessary personnel - Maintenance expenditure of facilities and equipment - Utility costs - Fuel and maintenance expenses for project vehicles - Vehicles for ICT of MSE trainings - Other necessary administrative expenses	<Japanese Side> [Japanese experts] - Chief Advisor/Institutional Development(1) - Inter-Agency Coordination / Dissemination Facilitation(1) - Quality and Productivity Improvement(6) - Activity Coordination(1) - Other necessary short-term expert(s) [Machinery and equipment] - Project vehicle (3) - Other equipment [Training for C/P] - Training in Japan - Training in the third-countries	- Necessary cooperation framework between ministries (MoI, Ministry of Urban Development and Construction (MoUDC), and Ministry of Education (MoE)) and agencies (including FeTA, ReTAs, FeMSEDA and ReMSEDAs) is maintained.
1-2	EKI establishes a network with relevant organisations including the private sector for quality and productivity improvement (KAIZEN).			
1-3	EKI evaluates the effectiveness of quality and productivity improvement (KAIZEN) to the enterprises which participate in in-company training.			
1-4	EKI carries out necessary publicity activities including seminars to promote quality and productivity improvement (KAIZEN) and reviews the current situation and direction for awareness building including the awarding system.			
2-1	EKI formulates the training plan for EKI Consultants.			
2-2	EKI develops the training curriculum for EKI Consultants.			
2-3	EKI develops course materials of the training for EKI Consultants (including the customisation of KAIZEN Manual based on various needs of specific sub-sectors and the translation into Amharic).			
2-4	EKI establishes the criteria and methodology to assess skill levels of EKI Consultants and undertakes initial assessment.			
2-5	EKI establishes the selection criteria and methodology, and selects LMEs which participate in in-company training in collaboration with the institutes and directorates of the Ministry of Industry (MoI).			
2-6	EKI conducts classroom training for EKI Consultants.			
2-7	EKI conducts in-company training for EKI Consultants.			
2-8	EKI examines how knowledge and skills acquired through the training course are effectively utilized on the ground by the EKI Consultants.			
2-9	EKI undertakes periodical evaluations of the achievement levels of EKI Consultants.			
2-10	EKI monitors and evaluates the results of the activities from 2-1 to 2-9.			
3-1	EKI formulates the plan of model training for TTTs based on consultation with Federal TVET Agency (FeTA) and Regional TVET Agencies (ReTAs).			
3-2	EKI develops the training curriculum for TTTs.			
3-3	EKI develops the course materials of training for TTTs (including the customisation of KAIZEN Manual for MSEs and the translation into Amharic).			
3-4	EKI establishes the methodology to assess skill levels of TTTs and sets the selection criteria of training participants with the support of FeTA.			
3-5	EKI selects training participants and undertakes initial assessment in collaboration with ReTAs.			
3-6	EKI establishes the selection criteria and methodology to select MSEs and TVETs which participate in in-company trainings with the support of Federal MSE Development Agency (FeMSEDA).			
3-7	EKI selects MSEs and TVETs which participate in in-company training in collaboration with Regional MSE Development Agencies (ReMSEDAs).			
3-8	EKI conducts classroom training for TTTs.			
3-9	EKI conducts in-company training for TTTs.			
3-10	EKI evaluates the achievement levels of trained TTTs.			
3-11	EKI monitors and evaluates the results of the activities from 3-1 to 3-10, and develops the TTTs' training guideline to share with FeTA and ReTAs.			

Pre-conditions
EKI is established and inaugurated officially with physical presence including personnel and budget allocation.
Details of necessary cooperation framework between ministries and agencies are agreed.

Appendix 13: Minutes of Meeting (M/M) of the 1st to 7th Joint Coordination Committee (JCC) Meeting

(1) The 1st Joint Coordination Committee (JCC) Minutes of Meeting (M/M)

MINUTES OF MEETING
FOR
THE FIRST JOINT COORDINATION COMMITTEE (JCC)
ON
APPROVAL OF WORK PLAN
FOR
THE PROJECT ON CAPACITY BUILDING FOR DISSEMINATION OF QUALITY AND PRODUCTIVITY IMPROVEMENT (KAIZEN)
IN
THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

Meeting Room of Ministry of Industry
ADDIS ABABA

9:30 a.m.~ 12:00
26th DECEMBER 2011

Mr. Newai Gebreab
Chairperson of Joint Coordinating Committee
Senior Economic Advisor to the Prime Minister
Federal Democratic Republic of Ethiopia

Mr. Tadesse Haile
Deputy Chairperson,
State Minister, Ministry of Industry

Mr.Koji Ota,
Chief Representative,
JICA office of Ethiopia

Mr. Wondwossen Kiflu
State Minister, Ministry of Education

Mr. Tsuyoshi KIKUCHI
Chief Advisor,
JICA Expert Team, Japan

Mr. Dessalegn Ambaw
State Minister, Ministry of Urban Development & Construction

Mr. Gebermeskel Challa Motalo
Director General, FeMSEDA

Mr. Getahun Tadesse
Director General, Ethiopian KAIZEN Institute (EKI)

1. Agenda for the Meeting

Approval of the Work Plan

The draft work plan prepared by the JICA Expert Team and Ethiopian KAIZEN Institute (EKI) was distributed to the participants before the day of the meeting.

2. Proceedings

The meeting was called to order at 09:30 and was chaired by Mr. Newai Gebreab, Senior Economic Advisor to the Prime Minister.

Mr. Koji Ota, Chief Representative of the JICA Ethiopia Office, was introduced by Mr. Hajime Kitaoka, Minister at the Embassy of Japan in Ethiopia, and gave the opening speech. Mr. Ota emphasized three points regarding the Project, i.e. (i) the expectations for the KAIZEN Project are becoming increasingly higher in both Ethiopia and Japan, (ii) quality is a very important issue and without high quality, it will be difficult to maintain sustainability and productivity and (iii) EKI consultants must continuously learn and develop themselves.

Following Mr. Ota's speech, Mr. Tsuyoshi Kikuchi, Chief Advisor for the Project, gave a presentation on the draft work plan using Power Point slides consisting of five parts: Prelude, Basic Policies, Profile of the KAIZEN Project, Features of the Work Plan (Training Programme) and Conclusions (see Annex 1).

(1) Approval of the Work Plan

After Mr. Kikuchi's explanation of the work plan, Mr. Newai, the Chairperson, asked for the opinions of all the participants. Through comments and discussions, the contents of the work plan were approved with some modifications by the participants. The main comments, questions and items of discussion by the participants at the meeting were as follows.

< KAIZEN Culture >

(i) Mr. Newai strongly indicated that the meaning of Prelude (2) is very important (*the essence of KAIZEN culture is to seek quality, not to seek quantity without quality*).

(ii) Mr. Tadesse said that Ethiopians are now in an era of a mindset change and mentioned the need to emphasise quality.

(iii) Mr. Gebermeskel raised the issue of quantity from the different angle of how to increase productivity.

(iv) Mr. Kikuchi replied to the above question with a quotation that improvement of the quality reduces the defect rate, thereby reducing the production cost and improving the productivity.

(v) Supporting Mr. Kikuchi's idea, Mr. Newai indicated that quality should be the priority and that the issue of efficiency and productivity could be taken as a second priority.

< Definition of KAIZEN >

(i) Mr. Newai asserted that defining KAIZEN in Ethiopian languages is very important and such definition should be made in at least five Ethiopian local languages which cover 90% of Ethiopia's population. This poses a major challenge for the EKI.

(ii) Mr. Getahun assured the JCC that the EKI, in cooperation with the JICA Expert Team, will establish a workable, professional and philosophical definition of KAIZEN in local languages which can be used in the policy documents.

< KIZUKI >

Mr. Newai asked the meaning of "KIZUKI". Mr. Kikuchi replied to the question referring to Page 7 of the work plan document.

< Roles of the EKI >

(i) Mr. Newai said that the expected outputs of the Project were logically put and he had no question to raise. However, Mr. Newai emphasised that the EKI must be firmly established to fully conduct the Project. In addition, Mr. Newai asked questions referring to Output 1 (*Establishment of the institutional and organizational foundations of the Ethiopian KAIZEN Institute = EKI as the core and lead organization for KAIZEN*) to Mr. Getahun saying that it is necessary for the EKI to give the JCC a full document stating which activities it wants to implement, how it can recruit new consultants and the budgetary implications, etc.

(ii) Mr. Getahun replied that a planning paper has already been submitted to the Council of Ministers to obtain approval of the budgetary implications and all other issues. The EKI will use the country civil service code to recruit consultants and this will be conducted before the end of this Ethiopian fiscal year. In addition, the EKI will not charge companies for their consultancy fees for two years.

(iii) Mr. Newai proposed to the EKI that a certain proportion of recruit must be reserved for the regions.

(iv) Mr. Dessalegn indicated that further human resources training is necessary.

(v) Mr. Shinkawa replied to Mr. Dessalegn that as KAISEN is still at the infant stage in this country, human resources development and capacity development systems will need to be well established first.

< Different Institutes for Dissemination >

(i) Mr. Tadesse said that KAIZEN should also be implemented at different higher institutes, such as the Civil Service College (to change the culture) in addition to private companies.

(ii) Mr. Wondwossen expressed his own idea while supporting Mr. Tadesse, saying that it is possible to disseminate KAIZEN using other institutes. He indicated that TVETs should be used as the core institution for KAIZEN dissemination in the regions as the EKI is not large enough to disseminate KAIZEN throughout the country.

(iii) In response to similar questions raised by both Mr. Wondwossen and Mr. Tadesse, Mr. Newai indicated that if the establishment of separate institutes is required, discussions should be held at the government level. Mr. Newai said that this is homework for the Ethiopian side.

< Network for KAIZEN Dissemination >

The JCC members unanimously approved the *Evaluation and Monitoring, Including Impact Survey*, proposed in the work plan.

< PDM and Short-Term and Long-Term Plans >

(i) Following Mr. Shinshaw, Mr. Wondwossen and Mr. Tadesse raised technical questions related to the PDM. In connection with these questions, Mr. Shinkawa requested that the JCC confirm the PDM immediately. An alternative would be for the JCC to scrutinize the PDM in detail and for the JICA to modify the PDM to incorporate the comments to be made by the JCC. This process could take quite some time to complete, likely delaying the implementation of the Project.

(ii) Mr. Newai requested that the JICA Expert Team and the EKI break down the project period into short-term and long-term plans.

< KAIZEN Implementation and In-Company Training >

Mr. Wondwossen asked whether or not the implementation of KAIZEN at the working level will be included in the In-Company Training (ICT). Mr. Kikuchi replied that KAIZEN will be implemented in each workplace where ICT will be conducted.

< KAIZEN and MSEs >

(i) Mr. Newai told the JICA Expert Team that as MSEs are informal businesses in the country and have no uniform standards governing their businesses, it may be difficult to implement KAIZEN at MSEs.

(ii) Mr. Kikuchi responded that KAIZEN does not discriminate between size or nature of the business, meaning that KAIZEN is applicable even to MSEs.

(iii) In support of Mr. Kikuchi's idea, Mr. Wondwossen cited this three to four months' experience of KAIZEN in Engineering Capacity Building Program (ecbp), particularly the implementation of the 5S at MSEs, saying that those MSEs which have already implemented KAIZEN have successfully improved their quality.

< Qualification of Consultants >

Mr. Tadesse asked the JICA Expert Team if there is any measure to verify the capacity of consultants, including the EKI itself. Mr. Kikuchi replied that the JICA Expert Team would propose a certification system for qualified consultants at the end of the Project for use by the EKI after the completion of the Project.

< Curriculum Adapted to the Ethiopian Context >

Mr. Newai suggested to the JICA Expert Team that modification of the training curriculum to make it suitable for Ethiopia is necessary. Mr. Kikuchi replied that discussions on this issue have been held with the EKI to adapt the curriculum to the Ethiopian conditions.

< Model Farmers and Technology Dissemination >

Mr. Newai said that in the agriculture sector, model farmers play an important role of technology dissemination to other farmers. He expects that the model companies of the Project will play the same role in the manufacturing sector.

< Number of Target Trainees for MSEs >

(i) Referring to the target trainees to be trained under the Project, Mr. Gebermeskel and Mr. Wondwossen made a request to the JICA Expert Team to increase the number of trainees to 35 per batch.

(ii) In response, Mr. Kikuchi indicated that the methodology which was tested in different countries with successful results can only accommodate a maximum of five trainees at a time. If this method is to be changed and more people are to be trained, it will definitely affect the quality of the training.

(iii) In support of the JICA Expert Team, Mr. Newai said that the JCC members would need to approve the JICA Expert Team's stance regarding technical matters. He also said that the JCC would have to allow itself to be guided by the opinion of the JICA Expert Team. He indicated that the only way to increase the quantity without affecting the quality would be to increase the number of experts.

(iv) JICA wanted to clarify the stance of the Ethiopian side: whether it wanted to increase the total number of trainees or to increase the number of trainees of the initial sessions. The

Ethiopian side replied that due to the sense of urgency, the number of trainees should be increased at each session by at least 30 or 35 in the first two batches.

(v) Following the comments made by Mr. Newai. Mr. Shinkawa said that it would be difficult to change the methodology to simply increase the quantity. He pointed out that the only way to increase the quantity would be to increase the number of experts.

(vi) Mr. Getahun asked JICA if there would be any chance to increase the number of experts.

(vii) In connection with this exchange, Mr. Newai indicated that if there were any chance that JICA could provide extra experts, discussions should take place with the JICA to explore the issue in the future.

[Supplementary Note Concerning the Above Issue]

After the conclusion of the JCC meeting, JICA and the JICA Expert Team held separate discussions with Mr. Wondwossen, Mr. Dessalegn, Mr. Gebermeskel and Mr. Getahun to find ways to increase and accommodate an additional number of trainees. Following thorough discussions and negotiations, the Ethiopian counterparts and the JICA agreed to double the number of JICA experts and to double the intake of trainees (20 trainees per batch) for the first two batches only.

< JCC >

Mr. Newai proposed that the JCC should be held at least three times a year to review the progress of the Project and also proposed a plan for the next four months. This proposal was agreed by the members of the JCC.

< Conclusions >

(i) Mr. Tadesse indicated that there were some comments that the EKI and JICA Expert Team needed to consider.

(ii) Mr. Newai declared that the project work plan was approved and that the next meeting would be held sometime in April, 2012. In addition, he gave two assignments to the JICA Expert Team and the EKI for the second JCC meeting.

1) To prepare a work plan report for the last four months
2) To prepare a work plan for the next four months

(iii) Mr. Kikuchi assured that the JICA Expert Team will return to Ethiopia on 15th January, 2012.

(iv) Mr. Ota added that the JICA Expert Team will start the first training session on 6th February, 2012.

Mr. Newai announced that the First JCC meeting was officially ended at 12:00.

[END]

[ANNEXES]

ANNEX-I Participants of the First Joint Coordinating Committee (JCC)

ANNEX-II Work Plan (Revised) : *Project on Capacity Building for Dissemination of Quality and Productivity Improvement (KAIZEN) in the Federal Democratic Republic of Ethiopia*

ANNEX-III Power Point Slides : *Project on Capacity Building for Dissemination of Quality and Productivity Improvement (KAIZEN) in Ethiopia.*

[ANNEX-I] Participants of the First Joint Coordinating Committee

< Ethiopian Side >

- H.E. Mr. Newai Gebre-ab, Senior Economic Advisor to the Prime Minister
- H.E. Mr. Tadesse Haile, State Minister, MoI
- H.E. Mr. Wondwossen Kiflu, State Minister. MoE
- H.E. Mr. Dessalegn Ambaw, State Minister, MoUDC
- Mr. Gebermeskel Chala, Director General, FeMSEDA
- Mr. Sinishaw Alamirew, Director, System Improvement & Human Resource Directorate, MoI
- Mr. Getahun Tadesse, Advisor to the Minister of MoI, EKI Director General
- Mr. Assefa Yimer, EKI consultant
- Mr. Delo Benka, EKI consultant
- Mr. Feten Getachew, EKI consultant

< Japanese Side >

- H.E. Mr. Hajime Kitaoka, Minister, Japan Embassy of Ethiopia (EoJ)
- Mr. Daisuke Komori, Second Secretary, EoJ
- Mr. Koji Ota, Chief Representative, JICA Office of Ethiopia
- Mr. Makoto Shinkawa, Senior Representative, JICA Office of Ethiopia
- Ms. Miho Oikawa, Project Formulation Advisor, JICA Office of Ethiopia
- Mr. Fekadu Nigussie, PSD In-House Consultant, JICA Office of Ethiopia
- Mr. Tsuyoshi Kikuchi, Chief Advisor, JICA Expert Team
- Mr. Masaaki Hanai, JICA Expert Team
- Mr. Hideo Sonoda, JICA Expert Team
- Mr. Seiji Sugimoto, JICA Expert Team
- Ms. Sawa Hasegawa, JICA Expert Team
- Hiroshi Nishizaki, JICA Expert Team

(2) The 2nd Joint Coordination Committee (JCC) Minutes of Meeting (M/M)

MINUTES OF MEETING
FOR
THE SECOND JOINT COORDINATION COMMITTEE (JCC)
ON
PROGRESS REPORT
AND
RECENT DEVELOPMENT OF EKI
FOR THE PROJECT ON THE CAPACITY BUILDING FOR DIS SEMINATION OF QUALITY AND PRODUCTIVITY IMPROVEMNET (KAIZEN)
IN
THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

Meeting Room of Ministry of Industry
Addis Ababa

9:30 a.m. – 11:00 a.m.
5th July 2012

1

H.E. Mr. Newai Gebreab
Chairperson of Joint Coordinating Committee
Senior Economic Advisor to the Prime Minister
Federal Democratic Republic of Ethiopia

Tadesse Haile
State Minister

H.E. Mr. Tadesse Haile
Deputy Chair Person
State Minister, Ministry of Industry

Mr. Koji Ota
Chief Representative
JICA Office of Ethiopia

Gebremeskel Challa
Director General

Mr. Gebremeskel Challa Motaro
Director General,
Federal MSE Development Agency

Mr. Tsuyoshi Kikuchi
Chief Advisor
JICA Expert Team, Japan

Mr. Getahun Tadesse
Director General
Ethiopian KAIZEN Institute (EKI)

1. **Agendas for the Meeting**

   i. Progress Report on the Project.

   ii. Report on the recent development of EKI.

2. **Proceeds**

   The meeting was called to order at 9:30am and was chaired by H.E. Mr. Newai Gebreab, Senior Economic Advisor to the Prime Minister.

   The meeting was launched by the opening speech made by H.E. Mr. Newai Gebeab briefly introducing the agenda of the meeting. The opening speech was followed by Mr. Tsuyoshi Kikuchi's presentation, Chief Advisor for the Project, on the progress of the Project. The presentation comprises four sections: Outline of the Project, Progress of the Project, Matters of Concern and Plan for the Coming Year [see Annex II]. Subsequently, Mr. Getahun Tadesse, EKI Director General, briefly explained the recent development of EKI and its activities.

3. **Progress of the Project**

   i. Mr. Tsuyoshi Kikuchi briefly explained the progress of the Project. Points that are noteworthy in terms of the progress of the Project are as follows;

   ii. With regards to the Output One, drawing-up "Short/Long Term Plan," Network Building and implementation of Public Relation (PR) activities are still under preparation and discussion, and the Impact Survey and the building of monitoring and evaluation system of the Project are now in progress.

   iii. In terms of the Output Two, *establishment of working system of human resource development in EKI for the dissemination of KAIZEN to LMEs*, the inception of the 1st Batch Training was delayed by 3.5 months. As for the number of LMEs participating the In-Company Training (ICT), 9 companies are currently under the ICT, being short of one company needed to reach the initial target of 10. As for trainees, 10 newly recruited EKI consultants participate in the Training as planned in the Work Plan (WP). However, former KAIZEN Unit (KU) members participate in the Training intermittently (on and off).

   iv. Regarding the Output Three, *building a model system for EKI to foster TVET Trainers' Trainers (TTTs) for KAIZEN for MSEs*, the 1st Batch Training was completed successfully, and currently the 2nd Batch Training is being implemented. As for the number of trainees, 18 trainees participate in the 2nd

Tadesse Haile
State Minister

Batch Training. However, as in the case of the Training for LMEs, former KU members participate in the Training for TTTs/MSEs intermittently.

v. Under the current situation of the Project, Mr. Tsuyoshi Kikuchi raised 'matters of concern' to raise the awareness of all the participants. In response to this, Mr. Newai Gebeab raised two concerns: delay in the Training Course for EKI Consultant/LMEs and sporadic participation of former KU members to the Project. Details of discussion are as follows.

<Delay in the Training Course for EKI Consultants/LMEs>

i. As mentioned above, Mr. Tsuyoshi Kikuchi explained that the Training Course for EKI Consultants/LMEs delayed for 3.5 months due to the delay in the approval of EKI organizational structure, staffing plan and salary scale and subsequently the delay in the recruitment of new EKI consultants.

ii. As a result of the delay, Mr. Tsuyoshi Kikuchi said that it is now difficult to complete the 5th Batch Training for EKI Consultants/LMEs within the Project period considering the quality of the Training.

<Intermittent Participation of former KU members to the Training >

i. Prior to the discussion on the concern, Mr. Koji Ota emphasized the fact that there are three major parties in the Project; EKI, JICA and the JICA Expert Team and it is important to recognize that each party is under strong pressure from its own respective stakeholders.

ii. In response to the concern on the participation of former KU members to the Training raised by Mr. Tsuyoshi Kikuchi, Mr. Getahun Tadesse replied that he does not share the concern of Mr.Kikuchi's idea of the worst scenario and the JICA Project is the most important project for EKI. And he is optimistic for its success. Having stated that, Mr. Getahun mentioned that two of the remaining former KU members are involved in the preparation of the EKI's Strategic Plan (SP) as well as Balance Score Card (BSC). Furthermore, former KU members are involved in other EKI projects such as implementation of KAIZEN to sugar industry, construction industry and other selected industries.

iii. H.E. Mr. Newai Gebreab replied that there was an agreement made at the inception of the JICA Project that the 8 former KU members fully participate in the implementation of the Project in order to succeed the Project. H.E. Mr. Newai also recognizes that there was a good reason to dismiss the three former KU members from EKI. Therefore, it is indispensable to recruit the substitutes

Tadesse Haile
State Minister

to in a manner that EKI ensures the quality of its employees and thereby lowers the turnover rate.

iv. In addition, H.E. Mr. Newai Gebreab articulated that the additional EKI projects which require former KU members' involvement should not be implemented or be at least secondary. EKI should implement other projects only when EKI and hence former KU members are afford to do so, and not the other way around. As the chair of the committee, H.E. Mr. Newai expressed the idea that "EKI should give priority to the Project."

v. H.E. Mr. Tadesse Haile commented that he agrees with the notion that the priority should be on the JICA Project.

vi. H.E. Mr. Newai Gebreab mentioned that the issue that the EKI and former KU members' involvement in the other projects will be discussed further in the Ethiopian side and Ethiopian side will propose a solution to this specific matter.

vii. Involvement of public enterprises as of October this year should be considered, said H.E. Mr.Newai in closing this agenda.

4. Recent Development of EKI

<EKI Organization>

i. Mr. Getahun Tadesse explained the recent development of EKI. At this moment, 42 technical staff has been employed and there are already 8 departments in EKI.

<EKI Institutional Strategy and Plan>

ii. As parts of its organization building, EKI is currently undertaking three internal assignments; i) preparation of the "Short/Long Term Plan" or "Strategic Plan," ii) Standardization of the business processes in EKI and iii) preparation of the Balance Score Card (BSC) which is to set standards on which performances of EKI will be evaluated.

<EKI's Own Projects>

i. Currently, there are five projects for EKI apart from the JICA Project as follows: i) implementation of KAIZEN to sugar industry and ii) house constructions which include 170 MSEs as well as 48 contractors, iii)road construction contractor , iv) water construction project led by Mr. Yegedeb Abey, former KU member, that are expected to contribute to the urban development

Tadesse Haile
State Minister

of Ethiopia, and v) export-led textile industry project to which two EKI directorates are assigned and 15 of its technical staff are to be involved. By October 2012, these projects will be completed and hence former KU members will be able to participate fully in the JICA Project from November 2012.

ii. Having explained briefly about the above-mentioned five EKI projects, Mr. Getahun Tadesse mentioned that all EKI staff expect for KU members will go through the JICA Project, particularly the Gemba KAIZEN training (or In-Company Training: ICT).

iii. In response to the explanation on the recent development of EKI, H.E. Mr. Tadesse Haile asked about the possibility to include, for example, a sugar firm into the JICA Project as a compensation to the one missing company for the 1st Batch ICT Training for EKI Consultant/LMEs. Furthermore, Mr. Tadesse Haile maintains the needs of scaling-up the Project taking advantage of the JICA's knowledge while simultaneously keeping the quality of the Training.

iv. In reply to the questions raised by H.E. Mr. Tadesse Haile, Mr. Hideo Sonoda, JICA Expert in charge of LMEs, said that the JICA Expert Team will do its best to accept an additional company for the 1st Batch ICT Training. Additionally, in term of the second question regarding scaling-up the Project, Mr. Tsuyoshi Kikuchi replied that it is possible to scale up the Project as long as EKI consultants participate fully in the Training Course. The JICA Expert Team is willing to train as much trainees as possible. To elaborate further, Mr. Koji Ota said that the Target Values on the PDM are just for the JICA Project and the Project is designed in a manner that EKI will be able to scale up KAIZEN activities using the consultants trained by the Project.

v. Mr. Gebremeskel Chala, Director General of FeMSEDA, raised two suggestions: i) integrating the EKI's projects into the JICA Project within the boundaries of the Project seems the best idea that is mutually beneficial, and ii) the EKI's housing project seems so big to handle with few EKI consultants that it would be better to use the TVET system.

vi. In response to the Mr. Gebremeskel Chala's first suggestion, Mr. Tsuyoshi Kikuchi said that it is acceptable to include the EKI's projects in the JICA Project as long as the target firms are privately-owned. This is because one of the Project objectives states that "*the system is established to disseminate quality and productivity improvement (KAIZEN) to private enterprises in a sustainable manner,*" according to the Record of Discussions on 13 September 2011.

Tadesse Haile
State Minister

vii. H.E. Mr. Newai Gebreab stated that the Project should be implemented in a generous way. The rule limiting the firms participating in the Training to private firms should be interpreted as "majority of firms to be private." Regardless, H.E. Mr. Newai proposed that EKI/Moi and JICA should have a separate meeting to settle this issues. Ethiopia side will discuss this issue with JICA.

viii. Mr. Gebremeskel Chala said that these issues are pertinent to the next Batch Training. Whether or not to integrate the EKI projects to the JICA Project and to delegate some of the EKI projects to TVET should be considered immediately.

ix. Mr. Getahun Tadesse further explained that EKI is not directly implementing projects associated with MSEs. Rather, EKI plans to assist TVET and MSEs-related agencies for the projects related to MSEs.

x. Mr. Getahun Tadesse stated that EKI also has projects to embed KAIZEN curriculums into i) the TVET system and ii) higher education systems. The projects are aiming to achieve the goals of the Growth and Transformation Plan and after, because the JICA Project only offers basic KAIZEN knowledge.

5. **Conclusion**

Prior to the conclusion, Mr. Koji Ota commented that sharing information and facilitating communications between EKI and the JICA Project side are important to succeed in the JICA Project.

H.E. Mr. Newai Gebreab suggests that Ethiopia side and Japan side have one mandate in common, that is, to ensure the success of the Project and both side must not let the Project fail. What Ethiopian side wants will be materialized later if the project is successfully completed. Therefore, EKI needs to take one step at a time and hence the JICA Project needs to be the priority for EKI. Moreover, Although how to deal with the EKI's additional projects needs to be discussed with JICA side, it seems that integrating these additional projects into the JICA Project is the best way for both parties.

Finally, H.E. Mr. Tadesse Haile stressed again that the reports made by the JICA Expert Team and EKI were fruitful in that they clarified the constrains of the JICA Project and in seeking the way forwards to address the constraints.. The success will come from working closely with the JICA side and the communication between

both parties has to be facilitated further.

H.E. Mr. Newai announced that the Second JCC was officially closed at 11:30a.m.

[END]

[ANNEXES]

ANNEX I	Participants of the Second Joint Coordinating Committee
ANNEX II	Presentation on Progress Report By Mr. Tsuyoshi Kikuchi

Tadesse Haile
State Minister

[Annex I] Participants of the Second Joint Coordinating Committee

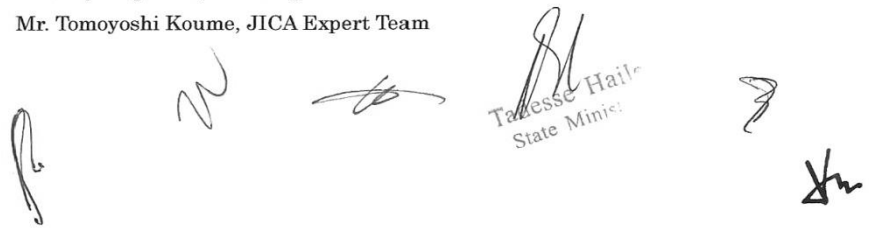
<Ethiopian Side>

- H.E. Mr. Newai Gebre-ab, Senior Advisor to the Prime Minister
- H.E. Mr. Tadesse Haile, State Minister, Ministry of Industry
- Mr. Gebremeskel Chala, Director General, FeMSEDA
- Mr. Getahun Tadesse, Director General, EKI
- Mr. Ezra Hailemariam, Corporate Communication Directorate Director, EKI
- Mr. Sientayehu Gashaw, Lead KAIZEN Consultant, EKI.
- Mr. Yegedeb Abay, Lead KAIZEN Consultant, EKI.
- Mr. Selamawit Kiros, Senior KAIZEN Consultant, EKI
- Mr. Samson Kedebe, Senior KAIZEN Consultant, EKI
- Mr. Fetene Getachew, KAIZEN Consultant, EKI

<Japanese Side>

- Mr. Takehiro Okubo, Minister-Counselor, Japan Embassy of Ethiopia (EoJ)
- Mr. Daisuke Komori, Second Secretary, EoJ
- Mr. Koji Ota, Chief Representative, JICA Office of Ethiopia
- Mr. Atsushi Nakagawa, Representative, JICA Office of Ethiopia
- Ms. Miho Oikawa, Project Formulation Advisor, JICA Office of Ethiopia
- Mr. Fekadu Nigussie, PSD In-House Consultant. JICA Office of Ethiopia

- Mr. Tsuyoshi Kikuchi, Chief Advisor, JICA Expert Team
- Mr. Hideo Sonoda, JICA Expert Team
- Mr. Seiji Sugimoto, JICA Expert Team
- Mr. Tomoyoshi Koume, JICA Expert Team



[ANNEX II] Presentation on Progress Report By Mr. Tsuyoshi Kikuchi

1. Outline of the Project

- Project Purpose:
  Establishment of the KAIZEN dissemination system to private enterprises
- Period: 3 years (Nov. 2011~ Oct. 2014)
- Target areas: All over Ethiopia
  (Base of activities : Addis Ababa)



2. Outline of the Project (cont.)

<Expected Outputs>
Establishment / development of ;

1. Institutional foundation of EKI as a core and lead organization.
2. System of HRD for LMEs.
3. Model system for EKI to foster TTTs for MSEs.

Contents

1. Outline of the Project
2. Progress of the Project
3. Matters of concern
4. Plan for the coming year

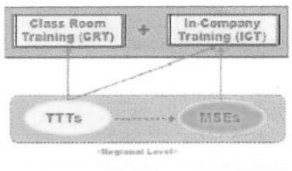
[Output 1]
Institutional Foundation of EKI

1. Short and long-term plan
2. Network building for KAIZEN
3. Monitoring & evaluation
4. Public relation



10

[Output 3]
Model Training System for TTTs / MSEs.



[Output 2]
Training System for LMEs.

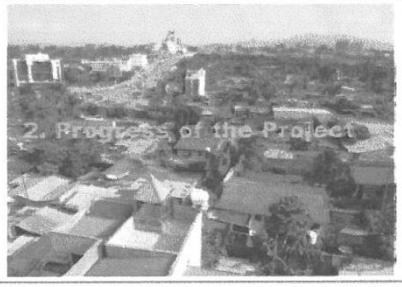
- Trainees: EKI new technical staff
- Sub Trainers : EKI consultants (KU members = Future KAIZEN leaders)
- Trainers: JICA experts
- Methods : CRT + ICT= Theory + Practice.
- Schedule : 5 Batches & 13 Sessions
- One Session : JICA expert + KU member + five EKI new tech. staff
- Targets : 65 trainees, 65 LMEs

[Output 2]
Training System for MSEs(cont.)

	Class Room Training	In-Company Training
Period	One month	2 months
Participants	<EKI side> 5 TTTs(Trainees) 1 KU member 1 JICA expert	<EKI side> 5 TTTs (Trainers) 1 KU member 1 JICA expert <Company side> Owner/managers KAIZEN project team
Contents of Training	<Theoretical Training> Basic KAIZEN techniques/tools & KAIZEN way of thinking, etc.	<Practical Training> Application of what learned at CRT to KAIZEN activities in each company.

[Output 2]
Training System for LMEs(cont.)

	CRT	ICT
Period	One month	3 months
Participants	<EKI side> 5 EKI consultants (Trainees) 1 KU member 1 JICA expert	<EKI side> 5 EKI consultants 1 KU member 1 JICA expert <Company side> Owner/managers KAIZEN project team
Contents of Training	<Theoretical Training> Basic and advanced KAIZEN techniques/ tools & KAIZEN way of thinking, etc.	<Practical Training> Application of what learned at CRT to KAIZEN activities in each company.



[Output 3]
Model Training System for TTTs / MSEs.

- Trainees: TVET trainers' trainers (TTTs)
- Sub Trainers : EKI consultants (KU members)
- Trainers: JICA experts
- Methods : CRT + ICT
- Schedule : 8 Batches & 40 Sessions
- One Session : JICA expert + KU member + five TTTs
- Targets : 200 trainees, 200 MSEs

2. Progress (Output 3)
1st Batch of Training for TTTs/MSEs

- Period : 3 months (6 Feb.~2 May)
- Trainers : 4 JICA experts
- Sub Trainers : 4 EKI consultants
- Trainees : 18 TTTs
- ICT companies : 20 MSEs

2. Progress (Output 1)

<Under Preparation & Discussion>
- Short & Long Term Plan (3years)
- Network Building
- Public Relation (PR)

<In Progress>
- Monitoring & Evaluation

2nd Batch for TTTs/MSEs Training Course:
Class Room Training at EKI building



2. Progress (Output 2)
1st batch of training for LMEs

- Period : 5 months (14 May~5 Oct.)
- Trainers : 2 JICA experts
- Sub Trainers : 2 EKI consultants
- Trainees : 10 EKI new tech. staff
- ICT companies : 9 LMEs

2. Progress (Output 3) :

1st Batch of Training for TTTs/MSEs Questionnaire:
Results for 1st Batch Class Room Training

Item	1. Yes	2. Mid-Opinion	3. No
Are you totally satisfied with the CRT program?	1	1	9
Were the practices (example: time observation, layout) useful for you?	8	1	0
Do you think these materials are useful, when you become a KAIZEN teacher?	7	1	3

Sample Number: 11

Questionnaire Results for 1st Batch ICT

KAIZEN Techniques are useful and understood very well.	KAIZEN Techniques are useful and understood to some extend.	KAIZEN Techniques are NOT useful and difficult to understand.
40 %	40%	20%



1st Batch for EKI Consultants-LMEs Training Course:
In-Company Training at ICT Company

3. Matters of Concern(1)

< Delay in the start of 1st batch of LMEs course >

1. Unable to implement the 5th Batch of the Training.
2. Unwilling to Change the Target Numbers;
   No. of Batch--- from 5 to 4.
   Trainees -------- from 65 to 40

2. Progress (Output 3)
1st Batch of Training for TTTs/MSEs
Questionnaire Results for 2nd Batch CRT

(Score 4: Very Good/Useful ~ Score 1: Not Good/Useful)

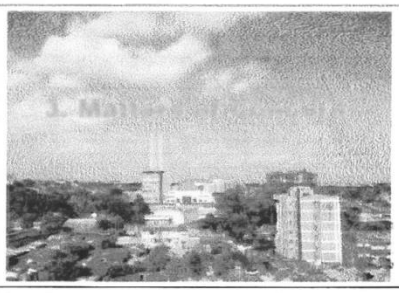
Item	Score (Out of 4 Points)
Are you totally satisfied with the CRT program?	3.8 points
Were the practices (example: time observation, layout) useful for you?	3.5 points
Do you think these materials are useful when you become a KAIZEN teacher?	3.6 points

Sample Number: 12

3. Matters of Concern(2)

<Difficulty in full participation by KU members in Training Program>

1. Difficulty in implementing systematic training for KU members due to intermittent (off and on) participation in the Program.
2. Decrease of sustainability of the previous Project (Phase I).
3. Unrealizable training system by cascade method.



3. Matters of Concern(3)

<Decrease in numbers of KU members (Sub trainers)>

1. Decrease in numbers of potential KAIZEN leaders.
2. Loss of potential KAIZEN leaders.

3. Matters of Concern

1. Delay in the start of 1st batch of LMEs course.
2. Difficulty in full participation of KU members in the Training Program.
3. Decrease of the number of KU members (Sub trainers).
4. Influence of the gradual expansion of the EKI original projects on the JICA assistance project.

4. Plan for the coming year
[Output 2] LMEs Training Course

Batch	Initial Plan		
	Session	Period	Trainees / Companies
1	2	14 May ~ 5 Oct. 2012	10/10
2	2	Sept. ~ Feb., 2013	10/10
3	3	Mar. ~ Aug., 2013	15/15
4	3	Sept. ~ Feb., 2014	15/15
5	3	Mar. ~ Aug., 2014	15/15
Total	13		65/65



4. Plan for the coming year
Output 3: MSEs Training Course

	Initial Plan		
	Session	Period	Trainees/ Companies
1	4	9 Apr.~5, 2012	20/20
2	4	6/9 ~30/8, 2012	20/20
3	5	Oct. ~ Dec., 2012	25/25
4	5	Feb. ~ Apr., 2013	25/25
5	5	Jun. ~ Aug., 2013	25/25
6	5	Oct. ~ Dec., 2013	25/25
7	6	Feb. ~ Apr., 2014	30/30
8	6	Jun. ~ Aug., 2014	30/30
Total	40		200/200

4. Plan for the coming year
[Output 1] Institution Building(1)

1. **S & L Plan:**
   Preparing the draft Plan after discussion with relevant organizations and agencies.
2. **Network Building:**
   Preparing a proposal for establishment of network.



4. Plan for the coming year
[Output 1] Institution Building(2)

3. **Monitoring & Evaluation (M & E):**
   Impact survey in progress.
   M & E to be made every session of training course.
4. **Public Relation (PR):**
   Preparing regular publication, arrangement of workshops /seminars,