

Short- and Longer-Run Impacts of Management Training: An Experiment in Tanzania

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20th June, 2016

Acknowledgement

- This research was supported by the World Bank Japan PHRD Trust Fund Number TF096317 and JSPS KAKENHI Grant Numbers 25101002 and 15H06540
- The opinions expressed and arguments employed are the sole responsibility of the authors

Background

- Entrepreneurs play key role in industrial development and job creation [[WDR 2013 “Jobs”](#)]
- Their managerial capacity is limited in developing world [Bloom and van Reenen ([2010 JEP](#)); Bruhn et al ([2010 AER](#))]
- A number of RCT of management training [Pioneered by Karlan and Valdivia ([2011 REStat](#))]
- Stylized facts: significant training impact on adopted management practices but not on business performance [Survey by McKenzie and Woodruff ([2014 WBRO](#))]
- Training impact evaluated too soon?

What we do

- RCT of management training for small garment manufacturers in Tanzania
- Panel data in the span of 4 years with negligible incidence of attrition

Findings

- Treated enterprises adopted a number of management practices soon after training
- They stopped using some practices later and instead assimilated other practices
- Significant training impacts on business performance 3 years later

Presentation outline

- Experimental design
- Externality
- Results
- Remarks

Study Site

- Small garment manufacturers in an **industrial cluster** in Dar es Salaam
- Manufacturers of similar or related products tend to locate in geographical proximity [Sonobe and Otsuka, 2011]
- Heterogeneity to be controlled is relatively small
- Garment cluster formed in 1990s by housewives participated in UNIDO training
- Samples randomly selected from associations





2016/06/20

Timeline

- Baseline survey (2010 Apr.)
- Classroom training program (2010 May.)
- Interim survey (2010 Sep.)
- On-site training program (2010 Nov.)
- 1st follow-up survey (2011 Apr.)
- 2nd follow-up survey (2012 Sep.)
- 3rd follow-up survey (2014 Jan.)

Training

Classroom training

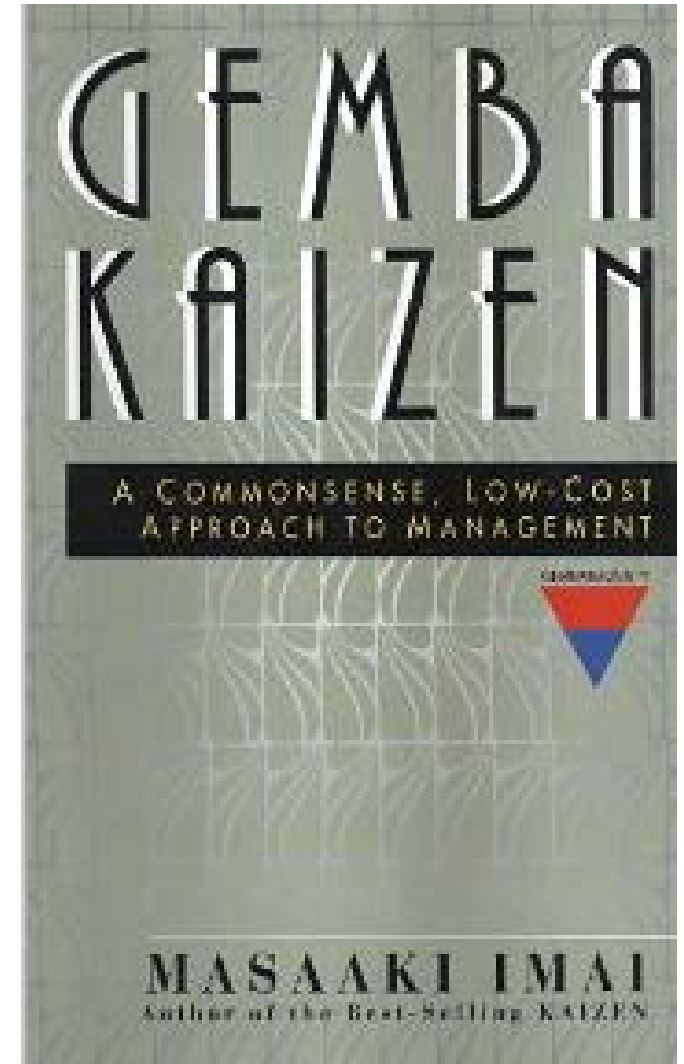
- Lectures and workshop: 50 hours
- Production management, entrepreneurship, marketing and record keeping
- 47 / 52 participated

On-site training

- Instructors visited each enterprise: half day * several rounds
- Mostly production management
- 54 / 54 enterprises received the consultation

Training

- Japanese expert of production management (*Kaizen*)
- *Kaizen*: a common-sense and low-cost approach to production management by reducing wasted work and materials and improving coordination among workers [Imai 2012]
- Local consultants with ILO's qualification (standard entrepreneurship, marketing, and record keeping)



Sample Size

- 111 (baseline) -> 105 (3rd follow-up survey)
- Negligible incidence of attrition (not systematic)
- Observable characteristics balanced

Group	Classroom	On-site	N
TT	Invited	Invited	26
TC	Invited	Not	24
CT	Not	Invited	29
CC	Not	Not	32
Total			111

Externality

- SUTVA (control group is unaffected by treatment) is likely to be violated
- Frequent communication among sample entrepreneurs
- **Knowledge spillover** from participants to non-participants
-> Estimated coefficients show conservative training impact
- Limited general equilibrium effect: 60 percent of sample enterprises export to neighboring countries and beyond

Externality

Table 1

	(1) Group TT	(2) Group TC	(3) Group CT	(4) Group CC
# of acquaintances invited to training	27.0	28.6	19.6	15.8
talked about <i>Kaizen</i> with	11.0	9.9	5.5	3.4
Willingness to pay (yes = 1) before the training programs	0.65	0.75	0.64	0.68
soon after training programs	1	1	1	1

Results

Management score [Bloom and van Reenen (2007 QJE)

-> McKenzie and Woodruff (2015 NBER WP) for SMEs in developing countries]

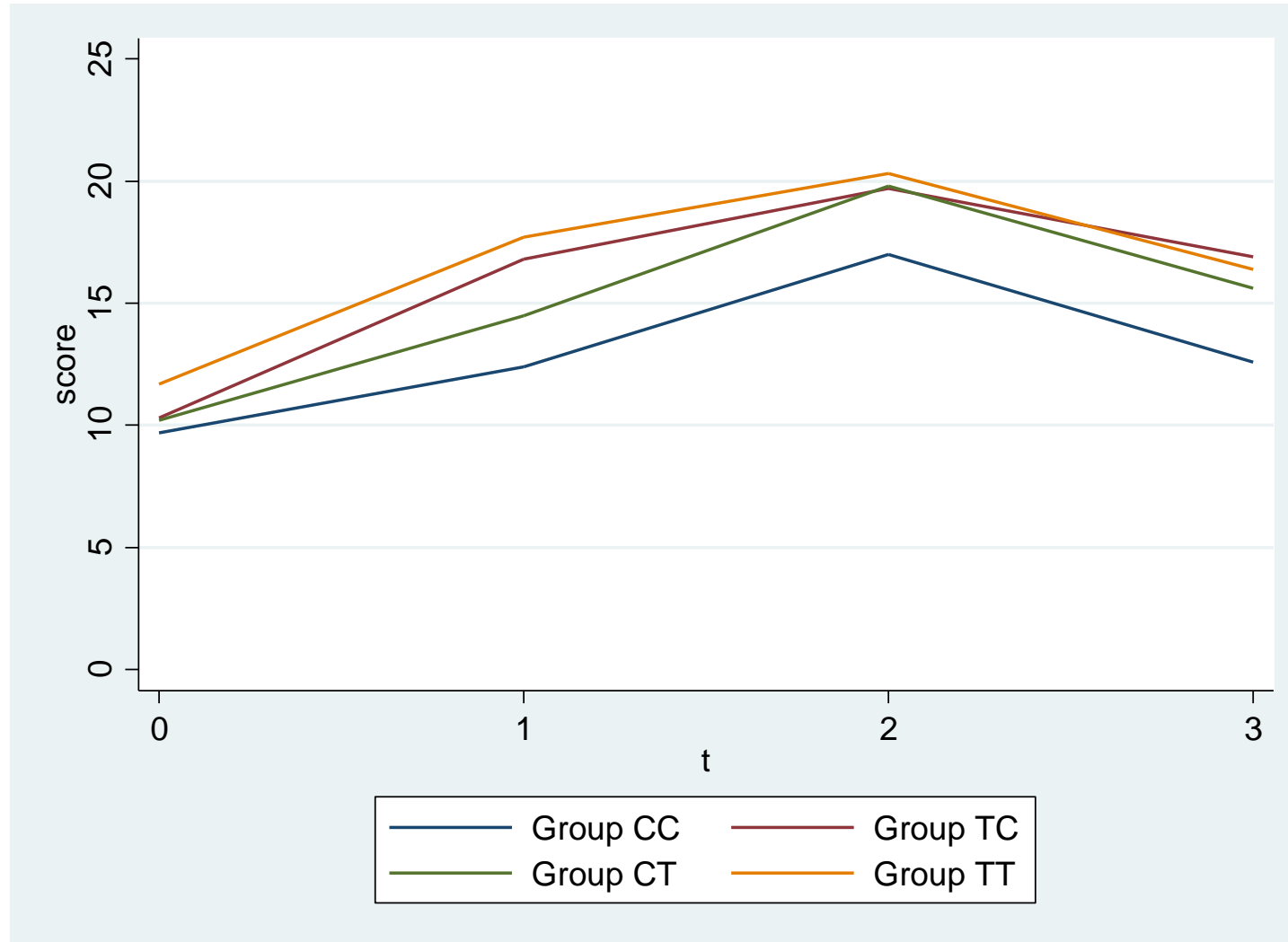
- Information on adopted management practices
- Enumerators' visual inspection and/or entrepreneurs' response
- Enumerators' fixed effect controlled in regressions (noise control)
- Based on 27 yes/no diagnostic criteria

Table 2

	Baseline adoption rate
<i>Sales promotion</i>	
The enterprise had any expenditure for advertisement in the last 3 mo.	10
The enterprise has any signboards in front of the workshop.	39
<i>Record keeping</i>	
The enterprise separates business and household expenses.	62
The enterprise keeps record of sales.	84
<i>Marketing</i>	
The entrepreneur can clearly describe the characteristics of their customers.	42
The entrepreneur has clear sales target or profit target in this year.	45
<i>Production management</i>	
The enterprise assigns any workers to inspect the quality of the products before sales.	10
The enterprise keeps records of quality defects.	22
The enterprise a flowchart indicating each production activity	10
The enterprise has no scrap cloths around the floor.	13

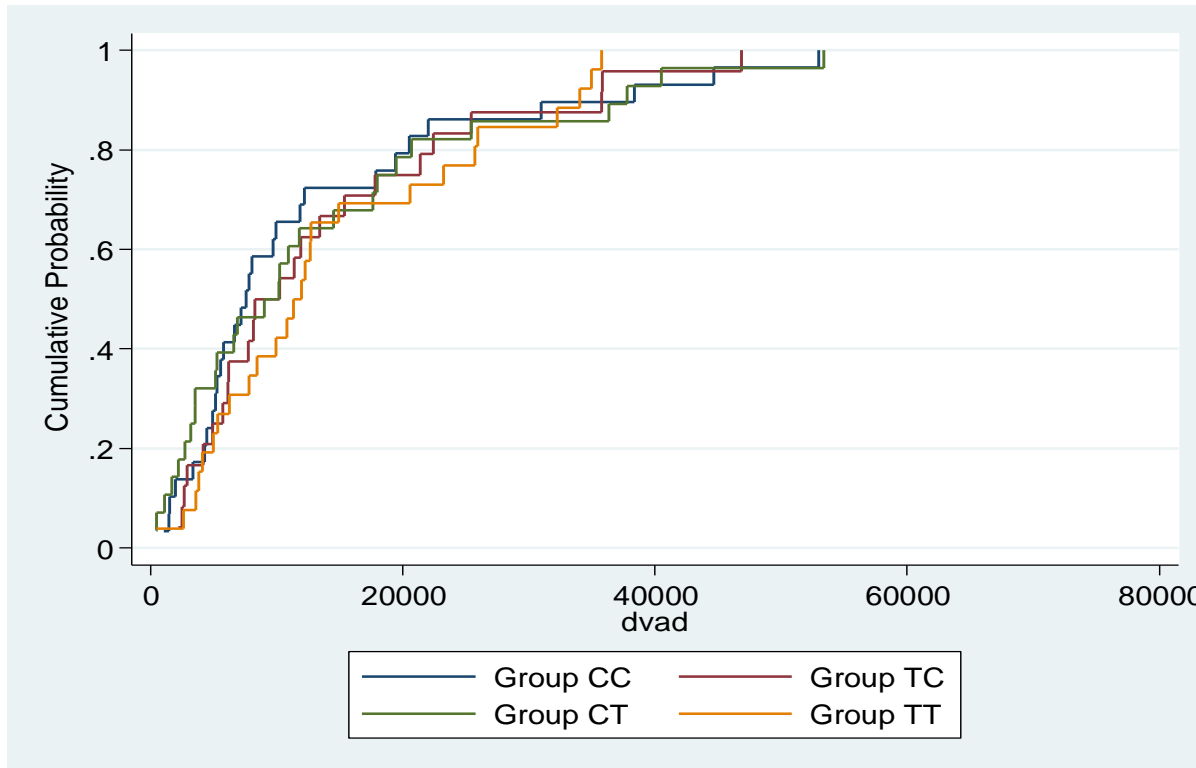
Results (management score [0-27])

Figure 1

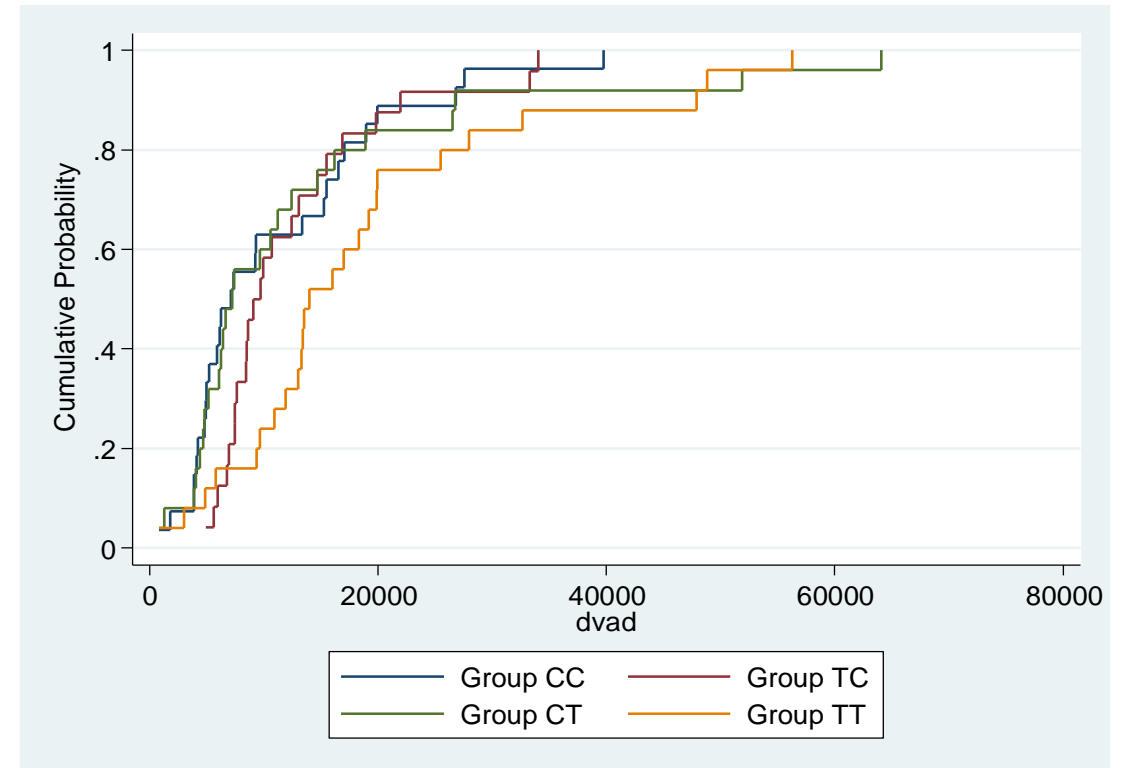


Results (value added [international \$])

Figure 2



(a) Baseline (2009)



(b) 3rd follow-up survey (2013)

Specification

- $y_{it} = \alpha + \beta_{Bt}Z_{Bi} + \beta_{Et}Z_{Ei} + \gamma y_{i0} + \sum_{n=1}^{N-1} \delta_n m_{nit} + \eta_t + \varepsilon_{it}$

- $Z_{B(E)i} = 1$ if invited to both (either) training program
- y_{i0} = (average) baseline value
- m_{nit} = enumerator dummies, η_t = time dummies
- ε_{it} = errors clustered at enterprise level

- ITT and TOT

- **ANCOVA** [McKenzie (2012 JDE)]

Add the mean of baseline value of an outcome variable as an additional control variable in the right-hand-side

- Fixed effect model for robustness check

Econometric results

Table 3

	(1)	(2)
	Both training	Either training
Management score		
Soon after	***	***
1.5 years later	**	***
3 years later	***	***
Value added and sales revenue		
2011	-	-
2012	**	-
2013	***	*
Investment		
2011 Jan. – 2012 Sep.	-	-
2012 Jan. – 2013 Dec.	*	-

Remarks

- Higuchi et al. (2015 JEBO) find sustained impacts of similar *Kaizen* management training in Vietnam
- Presence of knowledge spillover suggests greater social impacts
 - > Government intervention warranted
- This research highlights the importance of collecting panel data in a longer span after RCT

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Stepwise Approach For 5S KAIZEN TQM

RADIOLOGIE
CONSULTATION TRAUMATOLOGIE
LABORATOIRE
PHARMACIE ANNEXE
CONSULTATION CHIRURGIE
CONSULTATION MEDICINE
MORQUE

HOSPITALISATION MEDICINE
PERIATRIE
GYNECOLOGIE
BLOC TECHNIQUE
CABINET DENTAIRE
UNITE CHIRURGICALE
ORL OPHTHALMOLOGIE
BLOC FISTULEUSE

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