

# KAIZEN

(Ky'zen)

---

The Key to Japan's Competitive Success

---

MASAAKI IMAI

9.2443

31

op.2

29.24  
I 2  
100-1

# KAIZEN

(Ky'zen)

---

**The Key to Japan's Competitive Success**

---

**MASAAKI IMAI**



**Random House Business Division  
New York**

First Edition

987654321

Copyright © 1986 by The KAIZEN Institute, Ltd. (KAIZEN is a trademark of The KAIZEN Institute, Ltd.)

All rights reserved under International and Pan-American Copyright Conventions. No part of this book may be reproduced in any form or by any means, electronic or mechanical, including photocopying, without permission in writing from the publisher. All inquiries should be addressed to Random House, Inc., 201 East 50th Street, New York, N.Y. 10022. Published in the United States by Random House, Inc., and simultaneously in Canada by Random House of Canada Limited, Toronto

**Library of Congress Cataloging-in-Publication Data**

Imai, Masaaki, 1930-

Kaizen, the key to Japan's competitive success

Includes index.

1. Industrial management—Japan.      2. Comparative management.      I. Title.  
HD70.J3I547      1986      658'.00952      85-30015  
ISBN 0-394-55186-9

Manufactured in the United States of America

---

## *Acknowledgments*

*I* must admit that I cannot take credit for all the ideas expressed in this book. I have merely brought together the management philosophies, theories, and tools that have been developed and used over the years in Japan. If I have contributed anything, it is in organizing them under a single and readily understandable concept: KAIZEN.

In the course of writing this book, I have benefited from the help of many businesspeople, experts, and academics, both in Japan and abroad. Although I have tried to credit them by name in the text, giving all the names each time would be impossible.

Particular thanks go to Musashi Institute of Technology president Kaoru Ishikawa, one of the gurus of Total Quality Control (TQC) in Japan, and former Toyota vice president Taiichi Ohno, who initiated *kamban* and the "just-in-time" system. Ishikawa and Ohno consistently supported the Cambridge Corporation's efforts to explain KAIZEN to Western management and participated generously in the many seminars and workshops the Cambridge Corporation has held.

Other people who have provided assistance include professors Masao Kogure and Yoji Akao of Tamagawa University; president Masashi Nishimura and executive vice president Shuzo Moroto of Aisin-Warner; president Naohiko Yagi of Japan Steel Works; executive managing director Kaisaku Asano of Kayaba Industry; president Kenzo Sasaoka of Yokogawa-Hewlett-Packard, and president Yotaro Kobayashi of Fuji Xerox.

I have also benefited from the help of many executives actively engaged in implementing company-wide QC in Japan, among them Zenzaburo Katayama of Toyota; Zenji Shimada of Pentel; Hisashi Takasu of Kobayashi Kose; Motomu Baba, Ken Yonekura, and Kaoru Shimoyamada of Komatsu; Hidekazu Sadoya of Canon; Takeomi Nagafuchi and Haruo Kamimoto of Ricoh; Kenji Watabe of Japan Steel Works; and Yoshiki Iwata of Toyoda Gosei.

Beginning in 1957, I had the good fortune to start a five-year stint at the Japan Productivity Center in Washington, D.C., studying American management practices and helping to introduce them to Japan. This experience gave me valuable insights into management theory and practice and prepared me for a long and fruitful career as a management consultant. The man who organized the Japan Productivity Center 30 years ago and heads the organization as chairman today is Kohei Goshi. Not only did I find him most supportive during my formative years, I have enjoyed his continuing tutorship since returning to Japan in 1961.

Various publications by such organizations as the Union of Japanese Scientists and Engineers (JUSE), the Japan Productivity Center, the Japan Standards Association, the Central Japan Quality Control Association, and the Japan Management Association have been valuable resources for the writing of this book. In fact, I have often felt overwhelmed by the enormous amount of information available in Japan.

Others who assisted me in writing this book are Philips senior consultant S. Subramanian; Dynamic Management International director Ross Matheson; Japan Research president Fred Uleman; John Powers of the Academy for Educational Development; Educational Systems and Designs vice president Emmett Wallace; and Alberto Galgano, managing director of Alberto Galgano & Associati. I must also thank Allan Austin and Robert Zenowich of Austin & Lindberg, whose introduction to Random House made the publication of this book possible, as well as Patricia C. Haskell and Paul S. Donnelly of Random House for seeing it through to fruition.

Individuals cited in the text are identified by the positions they held at the time the interview took place or the quoted text was written. Likewise, conversion into U.S. dollars is based on the exchange rate prevailing at the time and is for reference only.

Last but not least, my thanks go to my secretary, Noriko Igarashi,

who has consistently assisted me in searching out and putting together the materials for the book, patiently typed, retyped, and re-retyped the manuscript, and put in long hours above and beyond the call of duty.

Yet despite my considerable debt to all of these people, it goes without saying that none of them should be held in any way responsible for my own inability to benefit fully from their assistance and to make this a better book than it is.

Masaaki Imai

---

## *Permissions Acknowledgments*

Grateful acknowledgment is made to the following for permission to reprint previously published materials:

excerpt from an article by Jeremy Main, *Fortune*. April 2, 1984.  
© 1984 Time Inc., All rights reserved.

excerpt from *Quality Progress*, October, 1983, copyright American Society for Quality Control, Inc. reprinted by permission.

Portions of this book originally appeared in the Japan Economic Journal (Nihon Keizai Shimbun) and *When in Japan* (Hotel Okura).

---

## ***About the Author***

**M**asaaki Imai has helped more than 200 non-Japanese and joint-venture companies rethink their organizations and introduce Japanese management approaches. Mr. Imai is Chairman of the Cambridge Corporation, an international management consulting and executive recruiting firm which he founded in 1962 and is based in Tokyo.

For five years in the 1950s, Mr. Imai, a graduate of the University of Tokyo who majored in American Studies, lived in the United States, working for the Japan Productivity Center in Washington, D.C. (His principal responsibility: escorting groups of Japanese businessmen through major U.S. plants so they could study "the secret of American productivity.")

Today, Mr. Imai writes and teaches the Japanese business philosophy that step-by-step improvement in the nature of "refinements" or "enhancements" are equally as important as "break-through" innovations. His seminars are presented under the KAIZEN service mark. He is the author of *Never Take Yes for an Answer* and *16 Ways to Avoid Saying No*.

---

## **Glossary**

*Definitions of key KAIZEN terminology and concepts.*

**Analytical approach** (to management improvement): an approach based on learning from the evaluation of past experience.

**Autonomation** (Jidohka): a word coined to describe a feature of the Toyota production system whereby a machine is designed to stop automatically whenever a defective part is produced.

**Check Points and Control Points:** both check points and control points are used in measuring the progress of improvement-related activities between different managerial levels. Check points represent process-oriented criteria. Control points represent result-oriented criteria. What is the check point to the manager becomes a control point to the next-level manager. For this reason, check points and control points are also used in policy deployment.

**Cross-Functional Management:** the interdepartmental coordination required to realize the policy goals of a KAIZEN and a Total Quality Control program. After corporate strategy and planning are determined, top management sets objectives for cross-functional efforts that cut laterally throughout the organization.

Cross-functional management is the major organizational tool for realizing TQC improvement goals. (While cross-functional management may resemble certain Western managerial techniques, it is distinguished from them by an intensive focus on the follow-through to achieve the success of goals and measures.)



**Deming Cycle:** the concept of a continuously rotating wheel used by W. E. Deming to emphasize the necessity of constant interaction among research, design, production, and sales so as to arrive at an improved quality that satisfies customers (see PDCA Cycle).

**Design Approach** (to management improvement): tries to build a better approach through predetermined goals. The design approach should receive greater attention in future applications of the management process.

**Five Management Objectives of Factory Management:** (see Chapter 4). Five key points of factory management set forth by Graham Spurling, Director of Mitsubishi Motors Australia.

**Goals and Measures** (in Japanese management): (see Policy).

**Improvement:** improvement as a part of a successful KAIZEN strategy goes beyond the dictionary definition of the word. Improvement is a mind-set inextricably linked to maintaining and improving standards. In a still broader sense, improvement can be defined as KAIZEN and innovation, where a KAIZEN strategy maintains and improves the working standard through small, gradual improvements, and innovation calls forth radical improvements as a result of large investments in technology and/or equipment.

A successful KAIZEN strategy clearly delineates responsibility for maintaining standards to the worker, with management's role being the improvement of standards. The Japanese perception of management boils down to one precept: maintain and improve standards.

**Jidohka:** (see Autonomation).

**Just-in-Time:** a production and inventory control technique that is part of the Toyota production system. It was designed and perfected at Toyota by Taiichi Ohno specifically to cut waste in production.

**KAIZEN:** KAIZEN means improvement. Moreover it means continuing improvement in personal life, home life, social life, and working life. When applied to the workplace KAIZEN means continuing improvement involving everyone—managers and workers alike.

**Kamban:** a communication tool in the "just-in-time" production and inventory control system developed by Taiichi Ohno at Toyota. A kamban, or signboard, is attached to specific parts in the production line signifying the delivery of a given quantity. When the parts have all been used, the same sign is returned to its origin where it becomes an order for more.

The kamban system is only one of many elements in a fully integrated system of Total Quality Control and cannot be inserted into a production process apart from these other TQC elements.

**Maintenance:** maintenance refers to activities that are directed to maintaining current technological, managerial, and operating standards.

**Manageable Margin:** the acceptable limits in a production process. When the check points indicate that the process has exceeded control limits, management must immediately determine the factors responsible and correct them.

There is a second phase to the manageable margin that is subtle and somewhat more difficult to manage. When a production process proceeds within the control limits but nonetheless establishes a pattern, such a pattern may be the first indication of forthcoming trouble and must be evaluated accordingly. Developing skills to manage at this level of subtlety is the ultimate challenge to any management system.

**PDCA Cycle:** The PDCA Cycle—plan, do, check, action—is an adaptation of the Deming wheel. Where the Deming wheel stresses the need for constant interaction among research, design, production, and sales, the PDCA Cycle asserts that every managerial action can be improved by careful application of the sequence: plan, do, check, action (see also SDCA Cycle and Deming wheel).

**Policy (in Japanese management):** in Japan the term is used to describe long- and medium-range management orientations as well as annual goals or targets. Another aspect of policy is that it is composed of both goals and measures, that is, both ends and means.

Goals are usually quantitative figures established by top management, such as sales, profit, and market share targets. Measures, on

the other hand, are the specific action programs to achieve these goals. A goal that is not expressed in terms of such specific measures is merely a slogan. It is imperative that top management determine both the goals and the measures and then "deploy" them down throughout the organization.

**Policy Deployment:** the process of implementing the policies of a KAIZEN program directly through line managers and indirectly through cross-functional organization.

**Policy Prioritization:** a technique to ensure maximum utilization of resources at all levels of management in the process of policy deployment. Top management's policy statement must be restated at all management levels in increasingly specific and action-oriented goals, eventually becoming precise quantitative values.

**Process-Oriented Management:** a style of management that is also people oriented in contrast to one that is oriented solely toward results. In process-oriented management a manager must support and stimulate efforts to improve the way employees do their jobs. Such a style of management calls for a long-term outlook and usually requires behavioral change.

Some criteria for meriting rewards in this style are: discipline, time management, skill development, participation and involvement, morale, and communication. In a KAIZEN strategy these criteria are referred to as: *P Criteria*. KAIZEN strategy asserts that a conscious effort to establish a system which encourages P Criteria can produce significant competitive advantages for the company.

**QC (Quality Control):** according to the Japanese Industrial Standards (Z8101-1981) definition, quality control is a "system of means to economically produce goods or services that satisfy customer requirements."

When QC was first introduced to Japan by W. E. Deming in 1950, the main emphasis was on improving product quality by applying statistical tools in the production processes.

In 1954, J. M. Juran brought the concept of QC as a vital management tool for improving managerial performance. Today, QC is used as a tool to build a system of continuing interaction among all

elements responsible for the conduct of a company's business so as to achieve the improved quality that satisfies the customer's demand.

Thus, the term QC as used in Japan is almost synonymous with KAIZEN, and although the use of statistics still remains the mainstay of QC, it has come to add many other tools, such as New Seven tools for improvement.

**QC (Quality Control) Circles:** a small group that voluntarily performs quality control activities within the workplace, carrying out its work continuously as part of a company-wide program of quality control, self-development, mutual education, flow control, and improvement within the workplace.

**QCS (Quality, Cost, Scheduling):** in the construct of a hierarchy of overall company goals as described by Shigeru Aoki, senior managing director at Toyota Motors, the ultimate goal being "to make profits . . . is self-evident," . . . the "next superordinate goal should be . . . quality, cost, and scheduling (quantity and delivery). . . . Therefore we should regard all other management functions as existing to serve the three super-ordinate goals of QCS."

**Quality:** there is very little agreement on what constitutes quality. In its broadest sense, quality is anything that can be improved. When speaking of "quality" one tends to think first in terms of product quality. When discussed in the context of KAIZEN strategy nothing could be further off the mark. The foremost concern here is with the *quality of people*.

The three building blocks of a business are hardware, software, and "humanware." Only after humanware is squarely in place should the hardware and software aspects of a business be considered. Building quality into people means helping them become KAIZEN conscious.

**Quality Assurance (at Toyota):** quality assurance means assuring that the quality of the product is satisfactory, reliable, and yet economical for the customer.

**Quality Deployment:** a technique to deploy customer requirements (known as "true quality characteristics") into designing characteristics (known as "counterpart characteristics") and deploy them

into such subsystems as components, parts, and production processes. Quality deployment is regarded as the most significant development to come out of TQC in the last thirty years in Japan.

**Q Seven and the New Seven:** the seven statistical tools (commonly referred to as the Q Seven) and seven additional tools (the New Seven) that have made an indispensable contribution to the constant evolution and improvement of the Total Quality Control movement. (See listing in Appendix E.)

**Results-Oriented Management:** this style of management is well established in the West and emphasizes controls, performance, results, rewards (usually financial), or the denial of rewards and even penalties. Criteria, or *R Criteria*, are easily quantifiable and short term. Western style management emphasizes R Criteria almost exclusively.

**SDCA Cycle (Standardize, Do, Check, Action):** a refinement of the PDCA Cycle wherein management decides first to establish the standard *before* performing the regular PDCA function.

**Seven-up Campaign:** a slogan for an improvement campaign as part of a KAIZEN program at Nissan Motors in 1975 (see Chapter 2).

**Standardized Work:** as defined at Toyota this is the optimum combination of workers, machines, and materials.

**Standards:** a set of policies, rules, directives, and procedures established by management for all major operations, which serves as guidelines that enable all employees to perform their jobs successfully.

**Suggestion System:** in Japan the suggestion system is a highly integrated part of individual-oriented KAIZEN. Its design is as carefully plotted, implemented, and communicated as a company's strategic plan. Scrupulous attention is paid to top management responsiveness, and developing a system of feedback and rewards.

Japanese-style suggestion systems emphasize morale-boosting

benefits and positive employee participation over the economic and financial incentives that are stressed in the American-style systems. (The dimension of Japanese suggestion systems is illustrated by the number of suggestions submitted annually. In 1985 Matsushita was the Japanese company whose employees submitted the highest number of suggestions. The total number of suggestions exceeded 6 million!)

**TPM (Total Productive Maintenance):** total productive maintenance aims at maximizing equipment effectiveness throughout the entire life of the equipment. TPM involves everyone in all departments and at all levels; it motivates people for plant maintenance through small-group and voluntary activities, and involves such basic elements as developing a maintenance system, education in basic housekeeping, problem-solving skills, and activities to achieve zero breakdowns.

Top management must design a system that recognizes and rewards everyone's ability and responsibility for TPM.

**TQC (Total Quality Control):** organized KAIZEN activities involving everyone in a company—managers and workers—in a totally integrated effort toward improving performance at every level. This improved performance is directed toward satisfying such cross-functional goals as quality, cost, scheduling, manpower development, and new product development. It is assumed that these activities ultimately lead to increased customer satisfaction. (Also referred to as CWQC—Company-Wide Quality Control.)

**University of Labor:** the Japan Productivity Center has a program for educating union executives in the sound concepts of business management so that they can better negotiate with management.

**Visible Management:** the technique of providing information and instruction about the elements of a job in a clearly visible manner so that the worker can maximize his productivity. (The *kamban*, or card, system is an example of this technique.)

**Warusa-kagen:** a term in TQC that refers to things that are not yet problems, but are still not quite right. Left untended they may

develop into serious problems. Warusa-kagen is often the starting point of improvement activities. In the workplace, it is usually the worker who notices warusa-kagen, and, hence, the worker becomes the first echelon of maintenance and improvement.

---

## ***Foreword***

*If* we look back over the forty years following the Second World War, we have seen Japan attain the status of a world economic power, going through five phases of adaptation to become a formidable competitor in various product areas. These phases are:

- Large-scale absorption of technology imported from the United States and Europe
- A productivity drive of hitherto unseen dimensions
- A country-wide quality improvement programme inspired by the ideas of Dr. Deming and Dr. Juran of the United States
- A great degree of manufacturing flexibility, and finally
- Multinationality

After successfully assimilating foreign technology and then achieving very high productivity and top quality, Japanese industries are now focusing on flexible manufacturing technologies. This means having the capability to adapt manufacturing in a very short time to changing customer and market requirements. The key words are mechanisation, automation, robotisation and related systems.

There are many interesting things which Western companies can learn from the Japanese industrial environment. As you will read in this book, Philips has introduced a Company-Wide Quality Improvement programme. Like most Western companies, Philips has learnt some lessons too. The programme we have instituted is directed



towards "Total Improvement" and is not restricted to product quality alone. The aim is to improve *everything* Philips does.

Mr. Masaaki Imai, who participated in the initial stages of this process in Philips, embraced the slogan and entitled his book *KAIZEN*. From this angle he has reviewed the Japanese strategy of the past three decades of improvements in productivity, quality and flexibility. He does this with vivid examples and also looks at the tools and systems used. As such, this book can also be most illuminating for non-Japanese managers.

The world is going through a period of transition from fragmented markets to a more or less global one. Doing business in such an environment calls for unique characteristics of multinationality. To survive in a highly competitive world, it is imperative for multinationals to acquire the finesse which will enable them to be identified with and integrate into the business environment or country in which business is being done. However successful Japanese companies have been up until now, the real challenge they continue to face lies in becoming truly multinational. Having spent six years of my career in Japan, it became increasingly clear to me that there is a problem area in doing business on a global scale which the Japanese have not yet tackled properly, namely multinationality.

In their search for a model for the conduct of multinational business, the Japanese would do well to study the Dutch example. Sharing as these countries do, a relative smallness, the ability to adapt to the cultures, as well as the business practices, of other countries becomes a necessity. Such multinational behaviour has become second nature to the Dutch and has been exemplified by Philips for nearly 100 years.

One must not be discouraged by cultural differences. Manufacturing is definitely a global activity and, as such, good practices, wherever they come from, deserve our attention. However, Japanese top management, especially in our branch of industry, has to understand that one of the yardsticks used to measure their managerial qualities will be the degree to which they consider the world, including their home country, Japan, to be their battleground. Reciprocity is the key to our joint survival.

Dr. W. Dekker  
Chairman of the Supervisory Board  
N. V. Philips' Gloeilampenfabrieken