

INTRODUCTION TO QUALITY CONTROL

KAORU ISHIKAWA

INTRODUCTION

TO

**QUALITY
CONTROL**

3A CORPORATION

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Preface

Forty years have passed since I and my colleagues formally introduced the quality control (QC) movement to Japan in 1949. Since that time, Japanese QC methods have changed considerably. QC began with statistical quality control (SQC) and statistical process control (SPC) and progressed through supplier QC (1960), QC in new product development (1961) and QC in the sales department and distribution networks to QC in the construction and service industries. During this process, SQC has evolved into TQC (Total Quality Control) and CWQC (Companywide Quality Control), and recently into GWQC (Groupwide Quality Control, i.e. quality control covering a whole corporate group including its suppliers and distribution organizations).

The first edition of this book was published in 1954 and the second in 1964, and a total of about a hundred printings of these editions have been issued. Minor corrections were of course made to these editions, but the plates are beginning to wear out, and QC and its methods have changed. I have therefore decided to issue this revised edition. The basic principles described in the original editions remain the same, but new developments and advice have been added. The result is an introduction to QC with over 430 pages.

To understand QC, we need to know not only what QC itself is but also what SQC, SPC, TQC, CWQC and GWQC are. Every person in a company should know this, from the president down to the lowest worker. To achieve this understanding, we should first grasp what QC is and then move on to learn about methods such as quality assurance methods, the statistical approach, control methods and improvement methods. In this book, I have tried to explain these matters in down-to-earth, easily-understood language. Although computer-based statistical methods are becoming common, I have not dealt with them here. I have concentrated on pencil-and-paper methods, because analysis and control using such methods are still essential in the workplace, particularly in service

industries. I have also found that everyone studying QC methods needs the experience of plotting and analyzing data manually before moving on to using computers.

Top managers, department managers, administrative staff and workplace supervisors should study Chapters 1 and 2 by discussing the contents of these chapters thoroughly over a two-day period, while younger department managers, section managers, under-managers and technical staff should take six to eight days to study whole. When the book is used in undergraduate courses, case studies should also be included, since university students have no work experience. If one lecture is given per week, the book should be covered in one year.

I strongly urge readers who learn about QC through this book to put it into action. Theory and scholarship are also needed in QC, but it only yields tangible results if actually practiced. Some readers may think that what the book says is obvious. They are right. Before QC, what should obviously have been done inside and outside companies was either not being done at all or only being done piecemeal. An alternative definition of QC could in fact be, 'Everyone doing what should be done, in an organized, systematic way.' The machine industry was slow in adopting QC, and some in the construction and service industries at first claimed that it could not be applied to them because they were different from other industries. However, when it was actually tried, almost all the basic principles were found to be the same. Saying that 'QC won't work in our industry because we're different from the rest' is just an excuse for lack of motivation.

I hope readers will study this book carefully line-by-line, digest its contents well, and use them to enable their companies to survive in today's competitive free economy.

QC starts and ends with education.

In conclusion, I should like to express my warmest thanks to all at JUSE (The Union of Japanese Scientists and Engineers) who have assisted in preparing this book for publication since the first edition.

October 1988

Kaoru Ishikawa

Preface

Forty years have passed since I and my colleagues formally introduced the quality control (QC) movement to Japan in 1949. Since that time, Japanese QC methods have changed considerably. QC began with statistical quality control (SQC) and statistical process control (SPC) and progressed through supplier QC (1960), QC in new product development (1961) and QC in the sales department and distribution networks to QC in the construction and service industries. During this process, SQC has evolved into TQC (Total Quality Control) and CWQC (Companywide Quality Control), and recently into GWQC (Groupwide Quality Control, i.e. quality control covering a whole corporate group including its suppliers and distribution organizations).

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Acknowledgment

This book is an English translation of the late Dr. Kaoru Ishikawa's classic work "*Dai-3-pan Hinshitsu Kanri Nyūmon*" ("Introduction to Quality Control 3rd Edition"), originally published in Japanese by JUSE Press Ltd., the publishing arm of the Union of Japanese Scientists and Engineers. The publication of this English translation was planned with Dr. Ishikawa's ready consent before his death. Regrettably, he fell ill just at that time, and finally passed away in April, 1989. I cannot help but feel a deep sense of sorrow at his loss.

For many years, Dr. Ishikawa lectured and counseled managers and engineers from overseas in his capacity as a Principal Lecturer and Director of the Association for Overseas Technical Scholarship, 3A Corporation's parent organization. Many of the trainees who received his guidance are now playing key roles in their respective countries' business and industrial circles.

"*Hinshitsu Kanri Nyūmon*" was widely acclaimed on its publication in 1954 and has since been revised and reprinted many times. After particularly extensive rewriting and expansion to cover the use of computers and other modern developments, this third edition was published under the title "*Dai-3-pan Hinshitsu Kanri Nyūmon*" in 1988, making it Dr. Ishikawa's posthumous legacy to all students and practitioners of quality control.

In translating and publishing this book, we received exceptionally generous guidance and editorial assistance from Dr. Hitoshi Kume, Professor of the Faculty of Engineering of the University of Tokyo, Dr. Noriaki Kano, Professor of the Faculty of Engineering of the Science University of Tokyo, and Dr. Yoshinori Iizuka, Associate Professor of the Faculty of Engineering of the University of Tokyo. The publication of this book would have been extremely difficult without their help, and I am deeply indebted to them.

I am also grateful to them for approaching the American quality control pioneer Dr. J. M. Juran with a request to write some words of recommendation for this book. He was kind enough to comply with this request, and I would like to thank him sincerely for adding the finishing touch.

Finally, I would like to thank all those at JUSE Press Ltd. for their valuable cooperation over the long period from the planning stage to final publication.

October 1990

Publisher

Modern quality control constitutes a revolution in management thinking, and implementing it companywide can dramatically improve a company's corporate culture.

As industry advances and society modernizes, quality control becomes more and more important.

It is my sincere hope that quality control will achieve the following aims:

Strengthen a country's economic base by making it possible to export high-quality, reasonably-priced products in large volumes.

Establish reliable industrial technology and enable technology transfer to other countries to flourish.

Secure a solid economic foundation for the future.

Finally, to enable companies to share their profits fairly among consumers, employees and company investment and raise their nation's standard of living.

If every nation plays its part in promoting quality control, the world will find peace, and its people will be able to live together harmoniously and happily.

We should all strive to create a lively, cheerful atmosphere within our companies and to build happy lives for our countries and the world.

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