Book Review

Implementing Quality Through BS5750 (ISO9000), Peter Jackson and David Ashton, Kogan Page, 1993. Number of pages: 225. Price £25.00.

The authors' preface states that this book has been written to meet the needs of small businesses, including those in manufacturing and service sectors.

The first part of the book discusses quality in general terms. No doubt some readers will be confused by the example given of the company which has a quality problem because 'rejects are plentiful because of the factory's high product quality standards'. The first part also includes an overview of the standard, arguments for and against businesses seeking accreditation, and guidance on seeking and obtaining accreditation.

Part 2 is an 'action plan' for obtaining accreditation, covering planning, development of the necessary procedures, and the assessment itself. Appendices provide lists of contacts and of accredited certification bodies (UK only).

The book presents a straightforward guide to the quality systems standards and their implementation. However, like the standards themselves it does not describe any methods for actually assuring quality.

P. D. T. O'CONNOR

Statistical Intervals — A Guide for Practitioners, G. J. Hahn and W. Q. Meeker, Wiley, New York, 1991. ISBN: 0-471-88769-2. Number of pages: 412. Price: $88.95 (£63.00).*

The quantification of uncertainty associated with estimation is a fundamental aspect of statistical analysis which is covered to some extent in most textbooks on the subject. As far as this reviewer is aware, however, this is the only book devoted entirely to this aspect. Unlike many texts on narrow aspects of statistics, this is an impressive and useful book.

It begins with a clear exposition of the principles of sampling, followed by a useful clarification of the three main types of interval estimates: confidence intervals (for population parameters), prediction intervals (to contain future sample observations) and tolerance intervals (which contain a given proportion of a population).

Two chapters are devoted to fairly standard methods based on the assumption of normality. These are followed by an exposition of non-parametric (distribution-free) methods, proportions and percentages arising from binomial processes and occurrence rates for Poisson processes. Three chapters are devoted to sample size requirements for the various intervals.

The second half of the book covers more special applications. There is a particularly useful section dealing with distributions used in reliability modelling (exponential, Weibull, Gamma, etc.) and another on regression analysis. The only disappointment was a very cursory overview of Bayesian methods.

Even though the text is well illustrated by examples dealing with issues as they arise, there is a further complete chapter devoted to real case studies which are presented 'warts and all' rather than the usual sanitised versions. There are 28 tables for all the procedures given in the text, and a set of FORTRAN subroutines for non-parametric estimation procedures is included.

This book is well written, well referenced (there are 270) and up-to-date. It is well laced with examples and refers frequently to the common computer packages likely to be used (MINITAB, SPSS, BMDP, SAS, SYSTAT, etc.). My initial fear was that this was going to be an unrewarding statistical backwater. Nothing could be further from the truth; it is a major work providing a coherent view of statistical analysis, which happens to be from the standpoint of interval estimation. I would strongly recommend it as a reference for anyone who has to wrestle with decision making under uncertainty, but it has a wider value in clarifying and unifying aspects of statistics that the reader has probably previously encountered in a spasmodic and unstructured way. Although the inclusion of some mathematics is essential, the level is not intimidating and proofs are largely omitted. In addition to being a valuable reference, it is also a 'good read.'

DAVID NEWTON

Process Capability Indices, Samuel Kotz and Norman L. Johnson, Chapman and Hall, 1993. Number of pages: 212. Price: £24.95.

When authors of the stature of Kotz and Johnson, in relation to topics of statistics and statistical quality control, team up to address the subject of process capability indices they must be taken seriously. Their new book is a specialized review of the statistical methods involved. Their foreword argues for the need for better understanding of these principles by the people who are involved in process control.

Whilst I cannot of course disagree with this premise, and therefore with the methods described in the book, I would not recommend it to the average engineer managing a typical production process, for two reasons. First, the mathematical treatment is rather advanced. Secondly, real processes are subject to glitches, problems, non-linearities, and other problems that make the beautiful tails of theoretical statistical distributions of largely academic interest. Shewhart called these 'special causes' of variation, and of course no real process is without them. Six Sigma is really a figment of the imagination in engineering situations.

Statistically inclined readers will find this book interesting, and it will stimulate further work and discussion.

P. D. T. O'CONNOR