

Book Review II

Complete Business Statistics

6th ed., Tata McGraw-Hill Publishing Company Limited, 2007,
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In today's world of cut-throat competition, successful management is distinguished from the rest by their judicious decision-making. Decision-making with business statistics has become a centre-stage issue in business and industry. It entails shifting the optimal course of action from among many alternatives available to the managers. This includes a comparative evaluation of various alternatives before arriving at the decision. Management has emerged as a science in view of the precision involved due to the plethora of facts and figures, with hidden information, which might form the intellectual basis for a meaningful decision. A manager can hardly succeed with his interpersonal skill alone; he must possess good technical skills as well. For this, he should have adequate knowledge of business statistics.

Although a large number of books are available in the market to cater to the statistical needs of students and professionals, the book under review, "Complete Business Statistics", in its sixth edition, co-authored by Amir D. Aczel and Jayavel Sounderpandian, aims at giving the reader an understanding of the concepts, components and application of business statistics.

The practicing manager can fall in the grips with the real-life problems of the corporate world if he has inadequate knowledge of quantitative tool in his intellectual arsenal. The book fulfils the objective of developing multifarious quantitative skills challenging situations.

In the book students can have a glimpse of

what they see in their world everyday because it contains real-world ideas, common sense, patient explanations, good references, multiple examples and intuitive approach for easy learning. The main focus is on using statistics to solve business problems of the real world.

The authors juxtapose the concept of business statistics, clearly instructing students on the process of analyzing the data using statistical tools with the templates in MS Excel. A CD-ROM has been included in the new edition, which is an admirable effort. VS icon indicates those content areas in the text where students might benefit from additional study by accessing Visual Statistics for additional study and practice. In addition to Chapter Zero, Appendices and Index, the book is divided into seventeen chapters in which fifteen chapters are present in the text book. The material on sixteen and seventeenth chapters which are Sampling Methods and Multivariate Analysis respectively, has been significantly provided in CD-ROM.

Each of the chapters opens with the key issues to be addressed page-wise and also the learning objectives are prominently displayed. Each chapter ends with a executive summary and review of terms introduces in the chapter. Each chapter has a short story of the New York Times or the concept of the topic of the chapter.

Chapter one to sixteen have a computer database exercise that uses data from the data disk (CD-ROM) provided with each copy of the book and the list of templates are mentioned just after contents of the book, in

a tabulated manner with heading as Workbook, sheet, short description, and page number, which has been a useful service to the readers. The book aptly starts with the opening chapters, "Working with Templates", giving idea of templates and working with it. Chapter headings: auto-calculate, data/table, goal seek commands, solver macro, formatting tips and saving the templates are self-explanatory.

The first chapter provides a brief overview of statistics and data and explains descriptive statistics with the help of numerical examples, charts, graphs, and uses excel templates to compute various measures.

Chapters 2, 3, and 4 contain the exhaustive treatment of the concept and application of probability, random variables, and probability distribution. Law of total probability and Bayesian are well explained through figures. Random variables are characterized by its probability distribution and identifying which type of distribution a given random variable is most likely to follow along with the templates for each distribution is well explained.

Normal distribution is analyzed in Chapter 4, with the transformation of normal random variables and its inverse along with normal approximation of binomial distribution using templates. In Chapter 5, the authors discussed sampling and sampling distributions, distinguishing between population parameter and sample statistics along with the estimators and their properties. Also, they explained the central limit theorem and illustrated the concept of degrees of freedom. Less emphasis is placed on numerical examples; however, there is a discussion on sampling methods. *The design of experiments is ignored.* The templates used to calculate the sampling distribution of a sample mean and a sample proportion are explained here.

The concept of statistical inference is presented in three chapters from Chapter 6 to 8. Confidence interval for population

mean and sample mean, large sample confidence intervals for the population proportions and population variance, and sample size determination are well illustrated along with templates using MS Excel. Also, a good discussion is made on the concepts of hypothesis testing, computing and interpreting p-values, comparing two population parameters along with the templates to carry out all tests.

Chapter 9 focuses on hypothesis test of analysis of variance. The concepts of computing ANOVA, ANOVA table, models, factors, turkey test for pair-wise analysis, blocking designs have also been provided by the author along with the templates to conduct one-way and two-way ANOVA.

Chapter 10 and 11 presents the tools for modeling the relationship between variables correlation and analyzing them. The authors have sought to determine whether a regression or multiple regression experiment would be useful or applicable in a given instance; further discussion is made on the computation of the covariance and correlation coefficient of two random variables, confidence intervals for regression coefficients, a prediction interval for a dependent variable, and test hypothesis about regression coefficients. Also, the authors use American express example in both the chapters, to describe, how to conduct an ANOVA experiment using regression results and analyze residuals to check the validity of assumptions about the regression model. They explains how indicator variables are used in a multiple regression, how poly nominal regression is carried out. Solver method and linest function are used to carry out a regression and multiple regression problems.

In Chapter 12, the authors talk about time-series, forecasting and index numbers. Time series analysis is explained to differentiate between qualitative and quantitative methods of forecasting. Components of time-series: trend analysis, seasonal and cyclical patterns are well discussed, but less

emphasis have been laid on the irregular behavior. Simple, weighted moving average, exponential smoothing methods are elaborated with the help of illustration and figures. Additive, regression and multiplicative model are briefly introduced. A small discussion at the end is made on Index numbers, emphasizing on the best-known price index which is consumer price index (CPI). Lacking are the headings like cost of living index, Laspeyre's index, Paasche's index, Fisher's Ideal method, price index and volume index. The template for trend, ratio-to-moving average and index calculation are self-explanatory.

Chapter 13 outlines the concept of statistical quality control and improvement. Emphasizing on W. Edward's Deming approach centers on creating an environment in which the 14 points can be implemented towards the achievement of quality. The concept to determine when to use control charts and create charts for sample means, ranges, standard deviations, sample proportions, number of defectives and pareto diagram are well illustrated with the help of templates. The authors had slipped out some contents like OC curves, average outgoing quality (AOQ) and total quality management (TQM) which enable the managers' complex systems to match the firm's products to customers' expectations.

Chapter 14 deals with non-parametric methods and chi-square tests. The distribution-free methods: sign test, run test, mann-whitney u-test, wilcoxon signed-rank test, Kruskal-Wallis test, Friedman test and Spearman rank correlation coefficient are illustrated with templates. Chi-square test for goodness of fit, independence and equality of proportion are discussed through solved numerical examples.

Chapter 15 describes bayesian statistics including bayes' theorem, discrete and continuous probability distributions, along with a brief evaluation of subjective probabilities. Further, an overview on

decision analysis is presented for solving sequential decision problems using the decision tree techniques and conduct decision analysis for cases with and without probability data.

The concluding chapters, sampling methods and multivariate statistics are included in PDF form on the student CD-ROM given at the end of the book. Sampling methods chapter highlights on non-profitability sampling: stratified, cluster and systematic sampling. Multivariate normal distribution, discriminant analysis, principle components and factor analysis are illustrated with the help of numerical examples.

As many as three appendices are mentioned at the end of the book. References related to each chapter of the book are given in Appendix A, except for the last two chapters which are present in CD-ROM. Appendix B consists of answers to most odd-numbered problems of all the seventeen chapters. Statistical tables: cumulative binomial, standard normal, chi-square, Poisson, t and F-distributions, Durbin-Watson test, Mann-Whitney, Wilcoxon T statistic, Spearman's rank correlation coefficient, control charts and random number tables are given in Appendix C.

The book exhibits the hard-work of authors as they have made it quite interesting through tabular, pictorial, excel explanation of the topics, solved fascinating examples, numerical questions and cases. Each end-of-section has problems related to the section. Each chapter has additional questions and minicase and sometimes appendix of excel formula and functions to practice and command the topic. Cases at the end of the text have been picked by the authors to go hand-in-hand with chapter concepts. The language is lucid, readable and clear.

A discerning reader might detect only a few weaknesses in the book. First, no

introduction to the history of statistics and its subdivisions are mentioned. Second, too precise information on the topics is a serious limitation for a textbook. Third, authors may like to come up with more Indian cases in the revised edition, which are lacking in the present edition. Fourth, the book does not fulfill the requirement of the students as it has less number of case studies. Fifth, it does not go into the depth of any of the techniques because it is using template for almost every technique given in the book.

Sixth, it does not have conventional references.

Nevertheless, the book is a valuable learning tool, helpful to students, teachers, and researchers who are keen to gain knowledge on the subject of great

importance and interest. Thus the book can be used as a reference book by students in business schools. It provides a platform to share experiences about the best management practices across all sectors of industry. It also imparts the experiences of leading industry practitioners with an aim to trigger the minds of professional managers as that they may innovate and adopt creative ways of dealing with complex issues.

In sum, the book is an interesting, student-friendly, and readable text that makes statistics interesting. An admirable effort has been made in explaining and elaborating the concept of statistics for management.

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