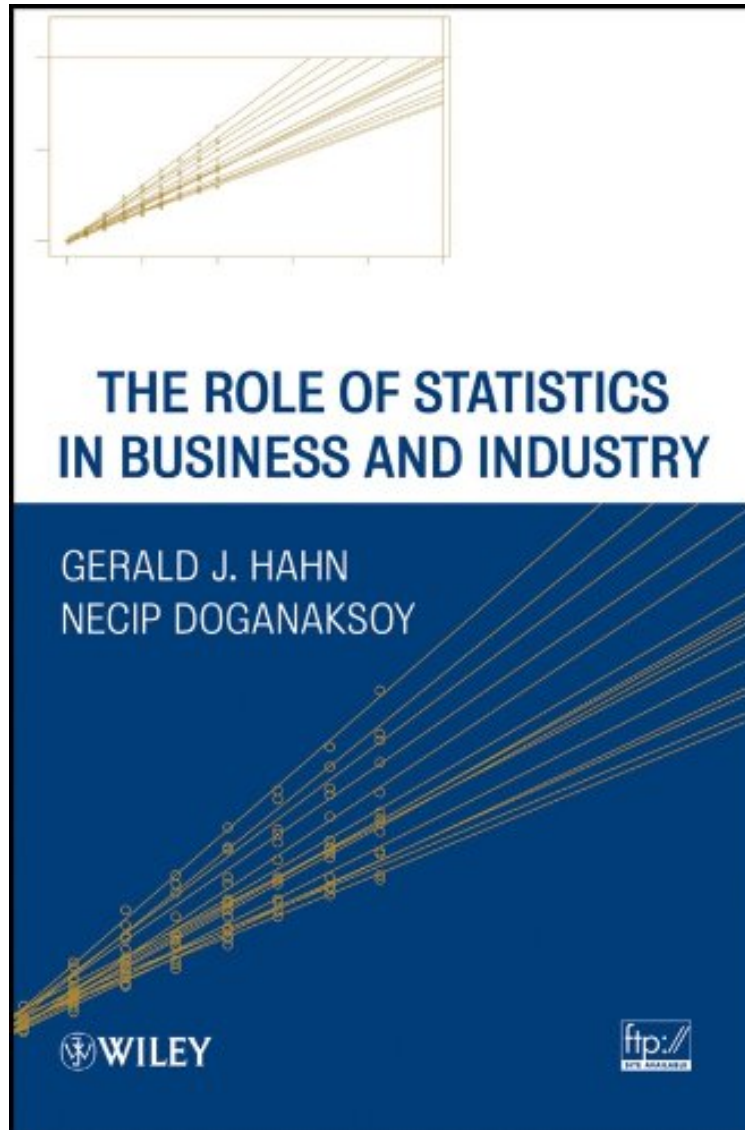


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The Role of Statistics in Business and Industry

Gerald J. Hahn, Necip Doganaksoy
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worked in the organization for nearly 28 years. He has always been a great leader in the advancement of statistical methods in industry and has contributed by authoring books on modern engineering statistics and statistical intervals. He worked and provided leadership in reliability, quality control including the six sigma movement under the corporate leadership of Jack Welch. Necip Doganaksoy worked under the mentorship of Gerry Hahn at GE and has made major contributions both under the leadership of Gerry Hahn and now Roger Hoerl. Based on many years of experience and exposure to the real world problems of GE, the authors have put together a very applicable text on the role of statistics in business and industry. The book describes many of the key problems that they were exposed to during their careers. They start by describing specific problems that are common in manufacturing and test design. They determine the key questions to address and then describe the statistical methods that are employed to solve these problems. This book is based on many years of experience in consulting and as key members of the GE Research and Development Group in Schenectady.

An insightful guide to the use of statistics for solving key problems in modern-day business and industry This book has been awarded the Technometrics Ziegel Prize for the best book reviewed by the journal in 2010. Technometrics is a journal of statistics for the physical, chemical and engineering sciences, published jointly by the American Society for Quality and the American Statistical Association. Criteria for the award include that the book brings together in one volume a body of material previously only available in scattered research articles and having the potential to significantly improve practice in engineering and science. Highlighting the relevance of statistical methods in everyday applications, *The Role of Statistics in Business and Industry* bridges the gap between the tools of statistics and their use in today's business world. This one-of-a-kind resource encourages the proactive use of statistics in three well-organized and succinct parts: *Setting the Stage* provides an introduction to statistics, with a general overview of its uses in business and industry *Manufactured Product Applications* explains how statistical techniques assist in designing, building, improving, and ensuring the reliability of a wide variety of manufactured products such as appliances, plastic materials, aircraft engines, and locomotives *Other Applications* describe the role of statistics in pharmaceuticals, finance, and business services, as well as more specialized areas including the food, semiconductor, and communications industries This book is truly unique in that it first describes case studies and key business problems, and then shows how statistics is used to address them, while most literature on the topic does the reverse. This approach provides a comprehensive understanding of common issues and the most effective methods for their treatment. Each chapter concludes with general questions that allow the reader to test their understanding of the presented statistical concepts as well as technical questions that raise more complex issues. An extensive FTP site provides additional material, including solutions to some of the applications. With its accessible style and real-world examples, *The Role of Statistics in Business and Industry* is a valuable supplement for courses on applied statistics and statistical consulting at the upper-undergraduate and graduate levels. It is also an ideal resource for early-career statisticians and practitioners who would like to learn the value of applying statistics to their everyday work.

"The wealth of applied examples and clear language will attract student readers and keep their attention whilst reading what is at times highly technical information." (Significance, 1 March 2011) "This book is not just of interest to statisticians, but may be even more valuable to professionals outside of our area, such as managers and engineers, who are frequently involved in data-based decisions... I appreciate the authors' strategy to motivate statistical tools by first posing the business problem or industrial question of interest. Every chapter of the book concludes with a summary of Major Takeaways and a set of useful and stimulating discussion questions. The book can also serve as a resource for aspiring statisticians, providing insight into the daily work of our profession." (The American Statistician, August 2009) "The Role of Statistics in Business and Industry is a perfect name for this book. The authors provide a powerful discussion on the challenges of business and industry and how statistics and statistical thinking fit in attaching those challenges. The book is meaningful, relevant and valuable to students, educators, technical professionals, managers and executives in their quest to field highly-reliable products, services and organizations to meet the challenges of today's marketplace." (Journal of Quality Technology, April 2009) "With its emphasis on real-world problems and applications, this is a good handbook for all statisticians in the manufacturing field. It also could be used in graduate or industrial training classes." (Quality Progress, April 2009) "This book is meaningful, relevant and valuable to students, educators, technical professionals, managers and executives in their quest to field highly-reliable products, services and organizations to meet the challenges of today's marketplace." (Journal of Quality Technology Vol. 41, No. 2, April 2009) "Highlighting the relevance of statistical methods in everyday applications, the book addresses more than 45 application areas that keep the use of statistics fresh and pertinent." (Entrepreneur, 2009) "Undergraduate students will find valuable connection points with the basic theory they are learning while manufacturing the managers overseeing projects on statistics will find valuable enlightenment here." (MAA s, December 2008) "This book is a unique resource guide that addresses relevant problems and case studies in the areas of business and industry prior to any discussion of the statistical methods necessary to resolve these problems. Highly recommended." (CHOICE, December 2008) From the Back Cover An

insightful guide to the use of statistics for solving key problems in modern-day business and industry. Highlighting the relevance of statistical methods in everyday applications, *The Role of Statistics in Business and Industry* bridges the gap between the tools of statistics and their use in today's business world. This one-of-a-kind resource encourages the proactive use of statistics in three well-organized and succinct parts: *Setting the Stage* provides an introduction to statistics, with a general overview of its uses in business and industry. *Manufactured Product Applications* explains how statistical techniques assist in designing, building, improving, and ensuring the reliability of a wide variety of manufactured products such as appliances, plastic materials, aircraft engines, and locomotives. *Other Applications* describe the role of statistics in pharmaceuticals, finance, and business services, as well as more specialized areas including the food, semiconductor, and communications industries. This book is truly unique in that it first describes case studies and key business problems, and then shows how statistics is used to address them, while most literature on the topic does the reverse. This approach provides a comprehensive understanding of common issues and the most effective methods for their treatment. Each chapter concludes with general questions that allow the reader to test their understanding of the presented statistical concepts as well as technical questions that raise more complex issues. An extensive FTP site provides additional material, including solutions to some of the applications. With its accessible style and real-world examples, *The Role of Statistics in Business and Industry* is a valuable supplement for courses on applied statistics and statistical consulting at the upper-undergraduate and graduate levels. It is also an ideal resource for early-career statisticians and practitioners who would like to learn the value of applying statistics to their everyday work.

About the Author **GERALD J. HAHN, PhD**, was manager of applied statistics in the Corporate Research and Development Center at General Electric (GE) for twenty-eight years, where he was named a GE Coolidge Fellow, the organization's highest honor. Dr. Hahn is the coauthor of *Statistical Models in Engineering and Statistical Intervals: A Guide for Practitioners*, both published by Wiley. **NECIP DOGANAKSOY, PhD**, is a Statistician and Principal Technologist at General Electric's Global Research Center and is also Adjunct Professor in the School of Management at Union Graduate College. A Six Sigma Master Black Belt, Dr. Doganaksoy has written over fifty papers and journal articles on statistical applications in quality, reliability, and productivity improvement.