Quantitative models in marketing have seen a rapid growth in the last decade. The book covers the new developments in Bayesian statistics, especially the MCMC techniques over the last 15 years that are now being applied in quantitative marketing. The book has 7 chapters and 2 appendices and addresses mainly an audience that is familiar with statistical models in marketing or Bayesian statistics. The numerical methods that are used in Bayesian statistics are quite sophisticated and the book gives many hints as what to do in certain situations or how to improve on computation times when running certain models and algorithms. Thus researchers who have tried to estimate similar models will find the book very helpful if they like to analyse their own data sets. Also, the book describes many models where programs are available and have been written in the program language R, and many of them are described by examples in the book. The inside pages of the front and back covers list the available programs of the package bayesm that is available from the Internet.

Here is short review of the contents of the book.

Chapter 1 gives on 8 pages a very brief introduction into the main topics of the book. Chapter 2 describes the “Bayesian essentials” that covers the Bayesian theory, evaluations methods and simulation techniques. Chapter 3 gives an general introduction into the Markov Chain Monte Carlo (MCMC) methods. Chapter 4 covers discrete demand models and describes the multinomial and multivariate probit models. Chapter 5 gives an overview on hierarchical models, in particular the hierarchical multinomial probit model and covers also mixture models. Chapter 6 is on “Model choice and decision theory” which means that many techniques are described as how to obtain marginal likelihoods and Bayes factors. For example, Chib’s method to compute marginal likelihoods is described, as well as importance sampling based methods and bridge sampling. The last chapter is on simultaneity and structural models and describes the Bayesian instrumental variable method.

Finally, the authors’ joint competence in applying MCMC method to marketing problems is reflected in the first part of the Appendix, which covers “Case Studies”. These are mainly applied studies that were published as joint works (in first line by G. Allenby), almost all in the last years in leading journals in the area of marketing. The first case study deals with the demand for packaged goods, like beer in bottles or six-packs. The second one is modeling interdependent consumer preferences. Case study 3 is on consumer satisfaction surveys, measured on a discrete scale. Case study 4 is a discrete choice conjoint study on consumer preferences and the last case study is on modeling consumer demand for product variety.

The second part of the appendix gives an introduction into hierarchical models while the second part describes the program package “bayesm”, written in R and available from the internet. References to the programs
To whom can I recommend this book?

The book will certainly be useful for many researchers who are applying marketing models, especially PhD students in business administration. But it is a demanding book, since it cannot be used as a stand alone text of Bayesian methods in marketing. For the average student in business administration and marketing the level of the book could be too high and these students first need an introduction into statistical modelling or Bayesian methods. Then this book can be a useful and important source of how to apply certain models or techniques. Even then some people might have to use other books or some original papers and publications to fully understand the issues which are sometimes only briefly mentioned in the book. But the book’s connection to the program package “bayesm” in R will make it an important study tool for potential practitioners or all those researchers who study Bayesian methods through “learning by doing”. But people who like to see progress in quantitative marketing will get many new ideas as how to develop their own models and they will be encouraged to do more research in marketing. It seems that the times when marketing was dominated by descriptive techniques have gone and the science of marketing has reached a more demanding level of applied research with modern computational and statistical techniques.

Wolfgang Polasek, Vienna, Austria.

Wilkinson, D.J. :
Stochastic Modelling for Systems Biology
Chapman and Hall / CRC, 2006, 254 pp
ISBN 1-58488-540-8

The Mathematical and Computational Biology Series of Chapman and Hall / CRC encourages the integration of mathematical, statistical and computational methods into biology. Systems biology is a new area, which unifies different approaches in genomics, proteomics and metabolomics using protein regulatory and biochemical networks.

This book is an excellent introduction to the concepts of stochastic modelling relevant for system biology applications based on stochastic processes.

The headings of the 11 chapters give an impression of this practically oriented book:

1. Introduction to biological modelling
2. Representation of biochemical networks
3. Probability models
4. Stochastic simulation
5. Markov processes
6. Chemical and biochemical kinetics
7. Case studies
8. Beyond the Gillespie algorithm
9. Bayesian inference and MCMC