Statistical Methods in Customer Relationship Management focuses on the quantitative and modeling aspects of customer management strategies that lead to future firm profitability. With emphasis on developing an understanding of Customer Relationship Management (CRM) models as the guiding concept for profitable customer management. To understand and explore the functioning of CRM models, this book traces the management strategies throughout a customer's tenure with a firm. Furthermore, the book explores in detail CRM models for customer acquisition, customer retention, joint customer acquisition and retention, customer churn, and customer win back.

Statistical Methods in Customer Relationship Management:

- Provides an overview of a CRM system, introducing key concepts and metrics needed to understand and implement these models.
- Focuses on five CRM models: customer acquisition, customer retention, joint customer acquisition and retention, customer churn, and customer win back with supporting case studies.
- Explores each model in detail, from investigating the need for CRM models to looking at the future of the models.
- Presents models and concepts that span across the introductory, advanced, and specialist levels.

Academics and practitioners involved in the area of CRM as well as instructors of applied statistics and quantitative marketing courses will benefit from this book.

Also available as an e-book: www.wiley.com/go/customer_relationship
Statistical Methods in Customer Relationship Management
Statistical Methods in Customer Relationship Management

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Dedicated with Love
To my parents, Patta & Viswanathan and uncle Kannan,
Other family members – Prita, Anita, Rohan and Aparna, and
My in-laws Dr. Lalitha and Ramamurthy

– V. Kumar

Dedicated with Love
To Katie: my wife, sweetheart, and the mother of our two
wonderful children Alexa and William

– J. Andrew Petersen
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Preface

Companies invest millions of dollars in Customer Relationship Management (CRM) systems and strategies. The primary objectives of these systems are to (a) acquire profitable customers, (b) retain profitable customers, (c) prevent profitable customers from migrating to competition, and (d) winning back ‘lost’ profitable customers. These four objectives collectively lead to increasing the profitability of an organization. While most firms recognize the benefits of establishing CRM systems and strategies, not all firms have been successful in their CRM implementations. So, why did they fail?

Traditional marketing theory and practice have always recommended that a company focus on expanding the customer base will lead to increased profitability. But, what about retaining the customers? Additionally, what about preventing customers from churning and winning back ‘lost’ customers? This book, at its core, explores these topics that are an integral part of the customer management process. Information and understanding these topics will contribute towards an enhanced financial performance of companies. Companies such as IBM, Zappos, Continental Airlines, Henkel, and Hewlett-Packard have understood the importance and relevance of all these four customer management topics as they apply to their organizations, thereby becoming leaders in their respective domains through the implementation of CRM programs. In order to understand the managerial relevance of these four customer management topics and successfully implement CRM systems, it is important to understand the engines that drive these systems – the quantitative models.

This book focuses on the quantitative and modeling aspects of customer management strategies that lead to future firm profitability. The book stresses on developing an understanding of the statistical models used in CRM applications as the guiding concept for profitable customer management. To understand and explore the functioning of models used in CRM applications, this book traces the management strategies throughout a customer’s tenure with a firm. Specifically, the book will review five sets of models that will facilitate effective customer management strategy development and CRM implementation. They are:

1. *Models for customer acquisition.* A customer’s tenure with a firm starts with his/her acquisition by the firm. Here, the firm’s decisions include identifying the right customers to acquire, forecasting the number of new customers, and the response of promotional campaigns, among others.
2. Models for customer retention. During the customer’s tenure with the firm, the firm would be interested in retaining this customer for a longer period of time. This calls for investigating the role of trust and commitment with the firm, metrics for customer satisfaction, and the role of loyalty and reward programs, among others. Additionally, decisions on who will buy, what the customers will buy, when they will buy, and how much they will buy are explored through a discussion of the various models used in the literature.

3. Integrated models for acquiring and retaining customers. This set of models focuses on the small subset of the literature that has linked customer acquisition and retention. Establishing this link is crucial as it has important implications for customer profitability and optimal allocation of marketing resources between acquisition and retention.

4. Models for customer churn. In modeling customer attrition, some of the important decisions made by a firm include identifying whether the customer will churn or not, and if so what will be the probability of the customer churning, and when.

5. Models for customer win-back. Customer win-back refers to ‘reacquiring’ customers after the customer has terminated the relationship with the firm. Here, it is important to understand what CRM models and strategies can do to bring the customer back to the firm in both B2C and B2B settings.

The above-mentioned five sets of models – customer acquisition, customer retention, customer acquisition and retention, customer churn, and customer win-back – form the core of this book. Apart from covering these models, the book will also investigate the need for such CRM models, review the implementation of these models, and look into the future of these models.

1 Need for this book

A review of the literature on CRM thus far shows the sheer volume, variety, and range of models and the research problems addressed. For academics and practitioners interested and/or involved in the area of CRM, this range becomes too wide to cover and may therefore lead to the development of ineffective CRM systems.

The foremost objective of this book is to serve as a guide to all the models in the CRM literature by classifying them into four sections: customer acquisition, customer retention, customer churn, and customer win-back. These four sections also happen to be the stages a customer goes through during his/her tenure with a firm. By traversing the path of a customer’s lifetime with a firm, this book will enlighten and educate the readers on all the models involved in the four stages and help them build effective CRM systems.
2 Supplements to the book

These are as follows:

1. The chapters pertaining to the five sets of CRM models will contain sample datasets to explain the working of the models described. These chapters will contain the SAS codes and SAS outputs for the sample datasets at the end of the respective chapters, and the sample datasets used (in Excel format) will be uploaded to the book’s companion website located at www.wiley.com/go/customer_relationship.

2. Downloadable PowerPoint presentations are available for all chapters via the text’s website.

3 Organization of the book

The book adopts a model-based approach toward CRM. It illustrates and reviews the quantitative and modeling aspects needed to understand and implement CRM strategies. The modeling techniques presented here form the foundation for designing and implementing strategic marketing decisions. A brief description of the chapters contained in this book is as follows:

- **Chapter 1: Introduction.** This chapter provides an overview and functioning of a CRM system. It introduces key concepts and metrics needed to understand and implement CRM models. It also describes the process of building and developing CRM models.

- **Chapter 2: Need for CRM models.** This chapter outlines the need for CRM models by emphasizing the developments thus far in the CRM literature. Further, this chapter discusses the overall structure of CRM models, and their uses and benefits from a business/marketing standpoint, rather than a technical one. The framework adopted in this book will be whether the models are deterministic or stochastic, and whether they are discrete or continuous. Thus all the models discussed in the book should fall into one of the five chapters that follow.

- **Chapter 3: Models for customer acquisition.** This chapter starts the discussion on the first stage of CRM – acquiring new customers. The objectives of customer acquisition modeling include identifying the right customers to acquire, predicting whether customers will respond to company promotion campaigns, forecasting the number of new customers, and examining the short- and long-run effects of marketing and other business variables on customer acquisition. The model specifications that are covered in this chapter include logit, probit, Tobit, linear regression, log-linear, vector autoregression, hazard function, and decision calculus. Besides covering the modeling aspects of customer acquisition, this chapter also reviews a large