PART I—THE PREDICTIVE ANALYTICS FOUNDATION	1
The Role of Artificial Intelligence in Demand Planning	3
Demand Planning Evolution	6
What Is Business Forecasting?	8
What Is Predictive Analytics?	12
Business Benefits of Predictive Analytics	15
What If? (Scenario Planning with Predictive Analytics)	19
Laws of Predictive Analytics and Business Forecasting	22
The Intersection of Business Forecasting, Machine Learning, and Business Intelligence	25
Types of Analytics	29
Machine Learning as a Cause and Effect	34
Traditional Business Forecasting vs. Predictive Analytics	38
New Models and Methods	41
SPOTLIGHT—How Starbucks Uses Predictive Analytics and Your Loyalty Card Data	43
Brave New World	45
Summary—A New Experience	47
Section Review	49
PART II—PREDICTIVE ANALYTICS AS A PROCESS	51
The Journey from Data to Insights	53
Principles and Considerations in Predictive Analysis	
Predictive Analysis Process	59
Define the Need	64
Gather Inputs	66
Clean and Explore Data	69
Dealing with Dirty Data	72
Predictive Modeling	75
Training Your Model	78
Choosing the Right Model	81
Monitoring and Evaluating Models	84

Five Tips to Avoid Under and Over Fitting	87
Avoiding Bias	89
Managing Outputs	93
SPOTLIGHT—RSI and Burger King Try to Forecast the Impossible	97
Collaboration in Predictive Analytics	100
Consensus—One Number Attitude	102
Summary—All About the Process	105
Section Review	107
PART III—PREDICTIVE ANALYTICS AS DATA ANALYSIS	109
Data Analysis and Data Mining	111
What Is Data Mining Used For?	113
Types of Data	116
What is Big Data?	120
N=All (How Much Data Do You Use?)	124
Data Mining Techniques	127
Reconciliation of Time, Space, and Item/Location	130
Clustering Analysis and Segmentation	134
Constraint-Based Clustering (Rule-Based Methods)	137
Connectivity-Based Clustering (Hierarchical Clustering)	142
Centroid-Based Clustering (K-Means)	146
SPOTLIGHT—How Volvo Mobility Used Clustering to Improve Their Car Sharing Experience	150
Summary—Finding Answers in Data	153
Section Review	156
PART IV—PREDICTIVE ANALYTICS AS AN APPROACH	159
Consumer-Driven Forecasting	161
Predictive Analytics Toolbox	163
Advanced Statistical Methods and Data Models	169

Naïve Bayes	172
Regression	177
Logistic Regression	183
Artificial Neural Networks	188
Decision Trees	194
ARIMA and ARIMAX	200
Al and Deep Learning	208
SPOTLIGHT—How Walmart Uses Kaggle to Find the Best Method	211
Summary—Strategies Using All of the Above	214
Section Review	216
PART V—PREDICTIVE ANALYTICS AS A FUNCTION	219
A Predictive Analytics Culture	221
A Good Planner	223
Seven Habits of a Highly Effective Demand Planner	225
Talent Management	228
Core Competencies of Success	232
Behavior/Personal Competencies	236
Functional/Technical Competencies	239
Enterprise/Professional Competencies	241
Imagination and Storytelling	243
Why Should I Send My Team to That Conference?	246
The Future of the Predictive Analytics Function	249
Transforming Your Predictive Analytics Function	252
Structuring Predictive Analytics Departments and Roles	259
SPOTLIGHT—Lowe's Data Interpreter/Analytics Translator	260
Winning Support and Executive Buy-In	263
Summary—Data Science or Demand Planning	266
Section Review	268

PART VI—PREDICTIVE ANALYTICS AS A SYSTEM	271
Rise of the Machine	273
Open-Source Tools Available for Forecasting	275
How to Choose a System That's Right for You	279
System Requirements	283
System Cost and Resources	287
Building a Business Case	290
Should You Use a Consultant?	294
Digital Transformation	297
Five Pitfalls of Transformation Projects	300
Building the Right Training and Development Program	304
Cloud	307
Data Visualization and BI	310
SPOTLIGHT—Escalade Sports Transformation	314
Summary—Building the Perfect System	317
Section Review	320
SECTION REVIEW ANSWERS	323
PREDICTIVE ANALYTICS GLOSSARY OF TERMS	331
REFERENCES AND ENDNOTES	343