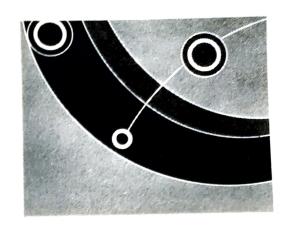
# FUNDAMENTALS OF BUSINESS ANalytics

2nd Edition

R N Prasad Seema Acharya

WILEY



# Contents

| Forew  | ord  | v           |
|--------|--|-------------|
| Prefac | e  | vii         |
| Ackno  | wledgments   | xi          |
|        | the Authors  | xiii        |
| 12000  |  | •           |
| 1      | Business View of Information Technology Applications                         | 1           |
|        | Brief Contents   | 1           |
|        | What's in Store  | 1           |
| 1.1    | Business Enterprise Organization, Its Functions, and Core Business Processes | 2           |
|        | 1.1.1 Core Business Processes  | 3           |
| 1.2    | Baldrige Business Excellence Framework (Optional Reading)                    | 6           |
|        | 1.2.1 Leadership   | 7           |
|        | 1.2.2 Strategic Planning   | 7<br>7<br>7 |
|        | 1.2.3 Customer Focus   |             |
|        | 1.2.4 Measurement, Analysis, and Knowledge Management                        | 7           |
|        | 1.2.5 Workforce Focus  | 8           |
|        | 1.2.6 Process Management   | 9           |
|        | 1.2.7 Results  | 9           |
| 1.3    | Key Purpose of using IT in Business  | 11          |
| 1.4    | The Connected World: Characteristics of                                      |             |
|        | Internet-Ready IT Applications   | 12          |
| 1.5    | Enterprise Applications (ERP/CRM, etc.) and Bespoke IT Applications          | 14          |
| 1.6    | Information Users and Their Requirements                                     | 17          |
|        | Unsolved Exercises   | 18          |
| Case S | Study Briefs   | 19          |
|        | Life HealthCare Group  | 19          |
| Coour  | Introduction   | 19          |
|        | ······································                                       |             |

|       |  | Contents |
|-------|--|----------|
|       | Business Segments                              |          |
|       | Organizational Structure                       | 20       |
|       | Quality Management                             | 20       |
|       | Marketing                                      | 20       |
|       | Alliance Management                            | 20       |
|       | Future Outlook                                 | 21       |
|       | Information Technology at GoodLife Group       | 21       |
|       | Human Capital Management & Training Management | 21       |
| Good  | ar ood Restaurants Inc.                        | 21       |
|       | Introduction                                   | 23       |
|       | Business Segments                              | 23       |
|       | Impeccable Processes and Standard Cuisine      | 23       |
|       | Marketing                                      | 23<br>24 |
|       | Supplier Management                            | 24       |
|       | Quality Management                             | 24       |
|       | Organization Structure                         | 24       |
|       | Future Outlook                                 | 25       |
|       | Information Technology at GoodFood             | 25       |
| TenTo | oTen Retail Stores                             | 27       |
|       | Introduction                                   | 27       |
|       | Business Segments                              | 27       |
|       | Organizational Structure                       | 27       |
|       | Marketing                                      | 28       |
|       | Supplier Management                            | 28       |
|       | Quality Management                             | 28       |
|       | Future Outlook                                 | 28       |
|       | Information Technology at TenToTen Stores      | 29       |
| 2     | Types of Digital Data                          | 31       |
|       | Brief Contents                                 | 31       |
|       | What's in Store                                | 31       |
| 2.1   | Introduction                                   | 31       |
| 2.2   | Getting into "GoodLife" Database               | , 32     |
| 2.3   | Getting to Know Structured Data                | 33       |
|       | 2.3.1 Characteristics of Structured Data       | 33       |
|       | 2.3.2 Where Does Structured Data Come From?    | 34       |
|       |  | 34       |
|       | 2.3.3 It's So Easy With Structured Data        | 35       |
| 2.4   | 2.3.4 Hassle-Free Retrieval                    | 36       |
| 2.7   | Getting to Know Unstructured Data              | 37       |
|       | 2.4.1 Where Does Unstructured Data Come From?  | 37       |
|       | 2.4.2 A Myth Demystified                       | 38       |
|       | 2.4.3 How to Manage Unstructured Data?         |          |
|       | 2.4.4 How to Store Unstructured Data?          | 39       |

| Content | i .  | • xvii   |
|---------|--|----------|
|         | 2.4.5 Solutions to Storage Challenges of Unstructured Data   | 40       |
|         | 2.4.6 How to Extract Information from Stored Unstructured Data?  | 41       |
|         | 2.4.7 UIMA: A Possible Solution for Unstructured Data  | 42       |
| 2.5     | Getting to Know Semi-Structured Data   | 43       |
|         | 2.5.1 Where Does Semi-Structured Data Come From?   | 45       |
|         | 2.5.2 How to Manage Semi-Structured Data?  | 47       |
|         | 2.5.3 How to Store Semi-Structured Data?   | 47       |
|         | 2.5.4 Modeling Semi-Structured Data (The OEM Way)  | 48       |
|         | 2.5.5 How to Extract Information from Semi-Structured Data?  | 49<br>50 |
| 2.6     | 2.5.6 XML: A Solution for Semi-Structured Data Management Difference Between Semi-Structured and Structured Data | 51       |
| 2.0     | Unsolved Exercises   | 56       |
| 3       | Introduction to OLTP and OLAP  | 59       |
|         | Brief Contents   | 59       |
|         | What's in Store  | 59       |
| 3.1     | OLTP (On-Line Transaction Processing)  | 59       |
|         | 3.1.1 Queries that an OLTP System can Process  | 60       |
|         | 3.1.2 Advantages of an OLTP System   | 61       |
|         | 3.1.3 Challenges of an OLTP System   | 61       |
|         | 3.1.4 The Queries that OLTP cannot Answer  | 61       |
| 3.2     | OLAP (On-Line Analytical Processing)   | 62       |
|         | 3.2.1 One-Dimensional Data   | 63       |
|         | 3.2.2 Two-Dimensional Data   | 64       |
|         | 3.2.3 Three-Dimensional Data   | 6        |
|         | 3.2.4 Should We Go Beyond the Third Dimension?   | 6        |
|         | 3.2.5 Queries that an OLAP System can Process  | 6        |
|         | 3.2.6 Advantages of an OLAP System   | 6        |
| .3      | Different OLAP Architectures   | 6        |
|         | 3.3.1 MOLAP (Multidimensional On-Line Analytical Processing)   | 6        |
|         | 3.3.2 ROLAP (Relational On-Line Analytical Processing)   | 6        |
|         | 3.3.3 HOLAP (Hybrid On-Line Analytical Processing)   | 6        |
| 4       | OLTP and OLAP  | 6        |
| .5      | Data Models for OLTP and OLAP  | 7        |
|         | 3.5.1 Data Model for OLTP  | 7        |
|         | 3.5.2 Data Model for OLAP  | 7        |
| 6       | Role of OLAP Tools in the BI Architecture  | 7        |
| 7       | Should OLAP be Performed Directly on Operational Databases?  | 7        |
| 8       | A Peek into the OLAP Operations on Multidimensional Data   | 7        |
|         | 3.8.1 Slice  | 7        |
|         | 3.8.2 Dice   | 7        |
|         | 3.8.3 Roll-Up  | 7        |
|         | 3.8.4 Drill-Down   | 7        |
|         | 3.8.5 Pivot  | 7        |

| $\mathbf{x}\mathbf{v}$ |  |  |
|------------------------|--|--|

|       | 3.8.6 Drill-Across   | Contents |
|-------|--|----------|
|       | 3.8.7 Drill-Through  |          |
| 3.9   | Leveraging ERP Data Using Analytics  | 77       |
|       | Solved Exercises   | 77<br>77 |
|       | Unsolved Exercises   | 83       |
| 4     | Getting Started with Business Intelligence                                 | 86       |
|       | Brief Contents   | 87       |
|       | What's in Store  | 87       |
| 4.1   | Using Analytical Information for Decision Support                          | 87       |
| 4.2   | Information Sources Before Dawn of BI?                                     | 88       |
| 4.3   | Definitions and Examples in Business Intelligence, Data Mining, Analytics, | 88       |
|       | Machine Learning, Data Science   |          |
| 4.4   | Looking at "Data" from Many Perspectives                                   | 89       |
|       | 4.4.1 Data Lifecycle Perspective   | 95       |
|       | 4.4.2 Data Storage (Raw) for Processing                                    | 96       |
|       | 4.4.3 Data Processing and Analysis Perspective                             | 97       |
|       | 4.4.4 Data from Business Decision Support Perspective                      | 97       |
|       | 4.4.5 Data Quality Management Aspects                                      | 100      |
|       | 4.4.6 Related Technology Influences of Data                                | 101      |
| 4.5   | Business Intelligence (BI) Defined   | 103      |
|       | 4.5.1 Visibility into Enterprise Performance                               | 104      |
| 4.6   | Why BI? How Can You Achieve Your Stated Objectives?                        | 105      |
| 4.7   | Some Important Questions About BI - Where, When and What                   | 106      |
|       | 4.7.1 Where is BI being used?  | 107      |
|       | 4.7.2 When should you use BI?  | 107      |
|       | 4.7.3 What can BI deliver?   | 107      |
| .8    |  | 107      |
|       | Evolution of BI and Role of DSS, EIS, MIS, and Digital Dashboards          | 107      |
|       | 4.8.1 Difference Between ERP (Enterprise Resource Planning) and BI         | 109      |
| .9    | 4.8.2 Is Data Warehouse Synonymous with BI?                                | 109      |
| .10   | Need for BI at Virtually all Levels  | 110      |
| .11   | BI for Past, Present, and Future   | 11       |
| .12   | The BI Value Chain   | 11       |
| .12   | Introduction to Business Analytics   | 11       |
|       | Unsolved Exercises   | 11       |
|       | BI Definitions and Concepts  | 11       |
|       | Brief Contents   | 11       |
| 5.1   | What's in Store  | 11       |
| · · · | BI Component Framework   | 11       |
|       | J.1.1 Business I gram  | 11       |
|       | J.1.2 Administration 10  | 12       |
|       | 5.1.3 Implementation Layer   | 12       |

| Contents             |  | • xix      |
|----------------------|--|------------|
| 5.2                  | Who is BI for?                                     | 126        |
| 1.2                  | 5.2.1 BI for Management                            | 127        |
|                      | 5.2.2 Operational BI                               | 127        |
|                      | 5.2.3 BI for Process Improvement                   | 128        |
|                      | 5.2.4 BI for Performance Improvement               | 128        |
|                      | 5.2.5 BI to Improve Customer Experience            | 128        |
| 5.3                  | BI Users   | 129        |
|                      | 5.3.1 Casual Users                                 | 130<br>130 |
|                      | 5.3.2 Power Users                                  | 131        |
| 5.4                  | Business Intelligence Applications                 | 131        |
|                      | 5.4.1 Technology Solutions                         | 133        |
|                      | 5.4.2 Business Solutions                           | 135        |
| 5.5                  | BI Roles and Responsibilities                      | 135        |
|                      | 5.5.1 BI Program Team Roles                        | 137        |
|                      | 5.5.2 BI Project Team Roles                        | 141        |
| 5.6                  | Best Practices in BI/DW                            | 144        |
| 5.7                  | The Complete BI Professional                       | 144        |
| 5.8                  | Popular BI Tools                                   | 148        |
|                      | Unsolved Exercises                                 | 140        |
|                      | Basics of Data Integration                         | 15         |
|                      | Brief Contents                                     | 15         |
|                      | What's in Store                                    | 15         |
| .1                   | Need for Data Warehouse                            | 15         |
| .2                   | Definition of Data Warehouse                       | 15         |
| .3                   | What is a Data Mart?                               | 15         |
| . <i>3</i><br>.4     | What is then an ODS?                               | 15         |
| . <del>1</del><br>.5 | Ralph Kimball's Approach vs. W.H. Inmon's Approach | 15         |
| . <i>5</i><br>.6     | Goals of a Data Warehouse                          | 15         |
|                      | What Constitutes a Data Warehouse?                 | 1.         |
| .7                   | 6.7.1 Data Sources                                 | 1          |
| 0                    |  | 1          |
| .8                   | Extract, Transform, Load                           | 1          |
|                      | 6.8.1 Data Mapping                                 | 1          |
|                      | 6.8.2 Data Staging                                 | 1          |
| 9                    | What is Data Integration?                          | 1          |
|                      | 6.9.1 Two Main Approaches to Data Integration      | 1          |
|                      | 6.9.2 Need and Advantages for Data Integration     |            |
|                      | 6.9.3 Common Approaches of Data Integration        | 1          |
| 10                   | Data Integration Technologies                      | 1          |
| 11                   | Data Quality                                       | 1          |
|                      | 6.11.1 Why Data Quality Matters?                   | 1          |
|                      | 6.11.2 What is Data Quality?                       | 1          |
|                      | 6.11.3 How Do We Maintain Data Quality?            |            |
|                      |  |            |
|                      | 6.11.4 Key Areas of Study                          |            |
|                      | Unsolved Exercises                                 |            |

 $\frac{1}{2}$ 

| 6.12.1 The Context 6.12.2 The Problem 6.12.3 The Solution 6.12.4 What is Data Profiling? 6.12.5 When and How to Conduct Data Profiling? 8.3 Summary A Case Study from the Healthcare Domain Solved Exercises Unsolved Exercises Unsolved Exercises Unsolved Exercises  7 Multidimensional Data Modeling  Brief Contents What's in Store  7.1 Introduction 7.2 Data Modeling Basics 7.2.1 Entity 7.2.2 Attribute 7.2.3 Cardinality of Relationship 7.3 Types of Data Model 7.3.1 Conceptual Data Model 7.3.1 Conceptual Data Model 7.3.2 Logical Data Model 7.3.3 Physical Model 7.3.3 Physical Model 7.3.4 Data Modeling Techniques 7.4.1 Normalization (Entity Relationship) Modeling 7.4.2 Dimensional Modeling 7.5 Fact Table 7.6.1 Dimension Hierarchies 7.6.2 Types of Dimension Tables 7.6.1 Dimension Hierarchies 7.6.2 Types of Dimension Tables 7.6.1 Dimension Hierarchies 7.6.2 Typical Dimension Schema 7.7.2 Snowflake Schema 7.7.2 Snowflake Schema 7.7.3 Identify the Grain 7.8.3 Identify the Grain 7.8.4 Identify the Grain 7.8.5 Identify the Facts Designing the Dimensional Model Solved Exercises 7.5 Sundadel Dimensional Model 7.8.5 Unsolved Exercises 7.5 Solved Exercises 7.5 Sundadel Dimensional Model 7.6 Solved Exercises 7.5 Sundadel 7.5 Sundadel 7.5 Solved Exercises  | 6.12 | Data Profiling                                 | Content |
|--|------|--|---------|
| 6.12.3 The Solution 6.12.4 What is Data Profiling? 6.12.5 When and How to Conduct Data Profiling? Summary A Case Study from the Healthcare Domain Solved Exercises Unsolved Exercises Unsolved Exercises Unsolved Exercises  7 Multidimensional Data Modeling  Brief Contents What's in Store 7.1 Introduction 7.2 Data Modeling Basics 7.2.1 Entity 7.2.2 Attribute 7.2.3 Cardinality of Relationship 7.3 Types of Data Model 7.3.1 Conceptual Data Model 7.3.2 Logical Data Model 7.3.3 Physical Model 7.3.3 Physical Model 7.3.4 Data Modeling Techniques 7.4.1 Normalization (Entity Relationship) Modeling 7.4.2 Dimensional Modeling 7.5 Fact Table 7.5.1 Types of Fact 7.6 Dimension Table 7.7 Typical Dimension Hierarchies 7.8 Dimensional Models 7.8 Dimensional Modeling Life Cycle 7.8 Dimensional Modeling Life Cycle 7.8 Jennify the Grain 7.8 Dimensional Modeling Life Cycle 7.8 Jennify the Dimensions 7.9 Jennify t |      | 6.12.1 The Context                             |         |
| 6.12.4 What is Data Profiling? 6.12.5 When and How to Conduct Data Profiling? Summary A Case Study from the Healthcare Domain Solved Exercises Unsolved Exercises Unsolved Exercises  7 Multidimensional Data Modeling  Brief Contents What's in Store  7.1 Introduction 7.2 Data Modeling Basics 7.2.1 Entity 7.2.2 Attribute 7.2.3 Cardinality of Relationship 7.3 Types of Data Model 7.3.1 Conceptual Data Model 7.3.2 Logical Data Model 7.3.2 Logical Data Model 7.3.3 Physical Model 7.3.4 Normalization (Entity Relationship) Modeling 7.4 Dimensional Modeling 7.5 Fact Table 7.6.1 Dimension Hierarchies 7.6.2 Types of Dimension Tables 7.7 Typical Dimensional Models 7.7.1 Star Schema 7.7.2 Snowflake Schema 7.7.2 Snowflake Schema 7.7.3 Fact Constellation Schema 7.8.1 Requirements Gathering 7.8.2 Identify the Dimensions 7.8.4 Identify the Dimensions 7.8.5 Identify the Dimensions 7.8.6 Dissipsing the Dimensions 7.8.7 Relationship Life Cycle 7.8.8 Dissipsing the Dimensions 7.8.9 Identify the Dimensions 7.8.1 Identify the Dimensions 7.8.2 Identify the Dimensions 7.8.3 Identify the Dimensions 7.8.4 Identify the Dimensions 7.8.5 Identify the Dimensions 7.8.6 Designing the Dimensional Model Scloved Exercises   |      | 6.12.2 The Problem                             |         |
| Summary   184   Summary   184   Summary   A Case Study from the Healthcare Domain   187   Solved Exercises   187   Solved Exercise   187   Solved Exercises   187   Solved Exercise   187   Solved Exercise   187   Solved    |      | 6.12.3 The Solution                            |         |
| Summary   184   Summary   184   A Case Study from the Healthcare Domain   187   Solved Exercises   201   203   204   205   2   |      | 6.12.4 What is Data Profiling?                 |         |
| Summary   184   A Case Study from the Healthcare Domain   187   Solved Exercises   187   203   203   203   203   203   203   203   203   203   203   203   203   203   203   203   204   205     |      | 6.12.5 When and How to Conduct Data Profiling? |         |
| A Case Study from the Healthcare Domain Solved Exercises Unsolved Exercises Unsolved Exercises  7  |      |  |         |
| Solved Exercises   187   207   208   208   209   |      | ·  | . '     |
| Unsolved Exercises   20    20    Multidimensional Data Modeling   20    Brief Contents   20    What's in Store   20    Introduction   20    7.2   Data Modeling Basics   20    7.2.1   Entity   20    7.2.2   Attribute   20    7.2.3   Cardinality of Relationship   20    7.3   Types of Data Model   20    7.3.1   Conceptual Data Model   20    7.3.2   Logical Data Model   20    7.3.3   Physical Model   20    7.3.4   Data Modeling Techniques   21    7.4   Data Modeling Techniques   21    7.4   Data Modeling Techniques   21    7.4.1   Normalization (Entity Relationship) Modeling   21    7.4.2   Dimensional Modeling   22    7.5   Fact Table   22    7.5   Fact Table   22    7.5.1   Types of Fact   22    7.5.1   Types of Dimension Tables   22    7.6.2   Types of Dimension Tables   23    7.7.3   Typical Dimension Models   23    7.7.4   Star Schema   23    7.7.5   Snowflake Schema   24    7.7.6   Dimensional Modeling   24    7.8.1   Requirements Gathering   24    7.8.2   Identify the Grain   25    7.8.3   Identify the Fracts   25    Designing the Dimensional Model   25    Solved Exercises   25    Solved Exercises   25   |      |  | ,       |
| Price   Pric   |      | Unsolved Exercises                             | _ '     |
| Richard Contents   205   |      |  |         |
| Street Contents   205  | 7    | Multidimensional Data Modeling                 |         |
| 7.1 Introduction 205  7.2 Data Modeling Basics 206  7.2.1 Entity 207  7.2.2 Attribute 207  7.2.3 Cardinality of Relationship 207  7.3 Types of Data Model 207  7.3.1 Conceptual Data Model 208  7.3.2 Logical Data Model 208  7.3.3 Physical Model 215  7.4 Data Modeling Techniques 219  7.4.1 Normalization (Entity Relationship) Modeling 219  7.4.2 Dimensional Modeling 222  7.5 Fact Table 225  7.6 Dimension Table 229  7.6.1 Dimension Hierarchies 229  7.6.2 Types of Dimension Tables 237  7.7 Typical Dimensional Models 237  7.7.1 Star Schema 237  7.7.2 Snowflake Schema 239  7.7.3 Fact Constellation Schema 243  7.8 Dimensional Modeling Life Cycle 246  7.8.1 Requirements Gathering 247  7.8.2 Identify the Grain 250  Designing the Dimensions Model 251  Solved Exercises 253   |      | Brief Contents                                 | 205     |
| 1.   |      | What's in Store                                | 205     |
| 7.2       Data Modeling Basics       206         7.2.1 Entity       207         7.2.2 Attribute       207         7.2.3 Cardinality of Relationship       207         7.3       Types of Data Model       208         7.3.1 Conceptual Data Model       208         7.3.2 Logical Data Model       208         7.3.3 Physical Model       215         7.4       Data Modeling Techniques       219         7.4.1 Normalization (Entity Relationship) Modeling       219         7.4.2 Dimensional Modeling       222         7.5       Fact Table       225         7.5.1 Types of Fact       225         7.6.1 Dimension Hierarchies       229         7.6.2 Types of Dimension Tables       229         7.6.1 Dimensional Models       237         7.7.1 Star Schema       237         7.7.2 Snowflake Schema       237         7.7.3 Fact Constellation Schema       243         7.8 Dimensional Modeling Life Cycle       246         7.8.1 Requirements Gathering       247         7.8.2 Identify the Grain       250         7.8.3 Identify the Facts       250         Designing the Dimensional Model       251         Solved Exercises       253  | 7.1  | Introduction                                   | 205     |
| 7.2.1 Entity 7.2.2 Attribute 7.2.3 Cardinality of Relationship 7.3 Types of Data Model 7.3.1 Conceptual Data Model 7.3.2 Logical Data Model 7.3.2 Logical Data Model 7.3.3 Physical Model 7.3.3 Physical Model 7.4 Data Modeling Techniques 7.4.1 Normalization (Entity Relationship) Modeling 7.4.2 Dimensional Modeling 7.5 Fact Table 7.6 Dimension Table 7.6.1 Dimension Hierarchies 7.6.2 Types of Dimension Tables 7.7 Typical Dimensional Models 7.7.1 Star Schema 7.7.2 Snowflake Schema 7.7.3 Fact Constellation Schema 7.8 Dimensional Modeling Life Cycle 7.8.1 Requirements Gathering 7.8.2 Identify the Dimensions 7.8.4 Identify the Dimensions 7.8.4 Identify the Facts Designing the Dimensional Model Solved Exercises 1253   | 7.2  |  |         |
| 7.2.2 Attribute       207         7.2.3 Cardinality of Relationship       207         7.3 Types of Data Model       208         7.3.1 Conceptual Data Model       208         7.3.2 Logical Data Model       215         7.4 Data Modeling Techniques       219         7.4.1 Normalization (Entity Relationship) Modeling       219         7.4.2 Dimensional Modeling       222         7.5 Fact Table       225         7.5.1 Types of Fact       225         7.6 Dimension Table       229         7.6.1 Dimension Hierarchies       229         7.6.2 Types of Dimension Tables       230         7.7 Typical Dimensional Models       237         7.7.1 Star Schema       237         7.7.2 Snowflake Schema       239         7.7.3 Fact Constellation Schema       243         7.8 Dimensional Modeling Life Cycle       246         7.8.1 Requirements Gathering       247         7.8.2 Identify the Grain       249         7.8.3 Identify the Dimensions       250         7.8.4 Identify the Dimensions       250         Solved Exercises       253  |      |  |         |
| 7.2.3 Cardinality of Relationship       207         7.3 Types of Data Model       208         7.3.1 Conceptual Data Model       208         7.3.2 Logical Data Model       208         7.3.3 Physical Model       215         7.4 Data Modeling Techniques       219         7.4.1 Normalization (Entity Relationship) Modeling       219         7.4.2 Dimensional Modeling       222         7.5 Fact Table       225         7.5.1 Types of Fact       225         7.6 Dimension Table       229         7.6.1 Dimension Hierarchies       229         7.6.2 Types of Dimension Tables       230         7.7       Typical Dimensional Models       237         7.7.1 Star Schema       237         7.7.2 Snowflake Schema       239         7.7.3 Fact Constellation Schema       249         7.8.1 Requirements Gathering       246         7.8.2 Identify the Grain       247         7.8.3 Identify the Dimensions       250         7.8.4 Identify the Facts       250         Designing the Dimensional Model       251         Solved Exercises       253  |      |  |         |
| 7.3 Types of Data Model  7.3.1 Conceptual Data Model  7.3.2 Logical Data Model  7.3.3 Physical Model  7.4 Data Modeling Techniques  7.4.1 Normalization (Entity Relationship) Modeling  7.4.2 Dimensional Modeling  7.5 Fact Table  7.5.1 Types of Fact  7.6 Dimension Table  7.6.1 Dimension Hierarchies  7.6.2 Types of Dimension Tables  7.7 Typical Dimensional Models  7.7.1 Star Schema  7.7.2 Snowflake Schema  7.7.3 Fact Constellation Schema  7.8 Dimensional Modeling Life Cycle  7.8.1 Requirements Gathering  7.8.2 Identify the Grain  7.8.3 Identify the Facts  Designing the Dimensional Model  Solved Exercises  1208  208  208  208  208  208  208  20   |      |  |         |
| 7.3.1 Conceptual Data Model 7.3.2 Logical Data Model 7.3.3 Physical Model 7.4 Data Modeling Techniques 7.4.1 Normalization (Entity Relationship) Modeling 7.4.2 Dimensional Modeling 7.5 Fact Table 7.5.1 Types of Fact 225 7.6 Dimension Table 7.6.1 Dimension Hierarchies 7.6.2 Types of Dimension Tables 7.7 Typical Dimensional Models 7.7.1 Star Schema 7.7.2 Snowflake Schema 7.7.3 Fact Constellation Schema 7.8 Dimensional Modeling Life Cycle 7.8.1 Requirements Gathering 7.8.2 Identify the Grain 7.8.3 Identify the Dimensions 7.8.4 Identify the Piacts Pessential Schema 7.8.5 Designing the Dimensional Model Solved Exercises 1208 2108 2108 2108 2108 2108 2108 2108   | 73   |  |         |
| 7.3.2 Logical Data Model       208         7.3.3 Physical Model       215         7.4 Data Modeling Techniques       219         7.4.1 Normalization (Entity Relationship) Modeling       219         7.4.2 Dimensional Modeling       222         7.5 Fact Table       225         7.5.1 Types of Fact       225         7.6 Dimension Table       229         7.6.1 Dimension Hierarchies       229         7.6.2 Types of Dimension Tables       230         7.7       Typical Dimensional Models       237         7.7.1 Star Schema       237         7.7.2 Snowflake Schema       239         7.7.3 Fact Constellation Schema       243         7.8 Dimensional Modeling Life Cycle       246         7.8.1 Requirements Gathering       247         7.8.2 Identify the Grain       249         7.8.3 Identify the Dimensions       250         7.8.4 Identify the Facts       250         Designing the Dimensional Model       251         Solved Exercises       253  | 7.5  | • •  |         |
| 7.4       Data Modeling Techniques       219         7.4.1       Normalization (Entity Relationship) Modeling       219         7.4.2       Dimensional Modeling       222         7.5       Fact Table       225         7.5.1       Types of Fact       225         7.6       Dimension Table       229         7.6.1       Dimension Hierarchies       229         7.6.2       Types of Dimension Tables       230         7.7       Typical Dimensional Models       237         7.7.1       Star Schema       237         7.7.2       Snowflake Schema       243         7.8       Dimensional Modeling Life Cycle       246         7.8.1       Requirements Gathering       247         7.8.2       Identify the Grain       249         7.8.3       Identify the Dimensions       250         Designing the Dimensional Model       251         Solved Exercises       253         Untertables       253   |      | <u> </u>                                       |         |
| 7.4       Data Modeling Techniques       219         7.4.1       Normalization (Entity Relationship) Modeling       219         7.4.2       Dimensional Modeling       222         7.5       Fact Table       225         7.6       Dimension Table       229         7.6.1       Dimension Hierarchies       229         7.6.2       Types of Dimension Tables       230         7.7       Typical Dimensional Models       237         7.7.1       Star Schema       237         7.7.2       Snowflake Schema       239         7.7.3       Fact Constellation Schema       243         7.8       Dimensional Modeling Life Cycle       246         7.8.1       Requirements Gathering       247         7.8.2       Identify the Grain       250         7.8.3       Identify the Dimensions       250         7.8.4       Identify the Facts       250         Designing the Dimensional Model       251         Solved Exercises       253  |      |  |         |
| 7.4.1 Normalization (Entity Relationship) Modeling       219         7.4.2 Dimensional Modeling       222         7.5 Fact Table       225         7.5.1 Types of Fact       225         7.6 Dimension Table       229         7.6.1 Dimension Hierarchies       229         7.6.2 Types of Dimension Tables       230         7.7       Typical Dimensional Models       237         7.7.1 Star Schema       237         7.7.2 Snowflake Schema       239         7.7.3 Fact Constellation Schema       243         7.8 Dimensional Modeling Life Cycle       246         7.8.1 Requirements Gathering       247         7.8.2 Identify the Grain       249         7.8.3 Identify the Dimensions       250         7.8.4 Identify the Facts       250         Designing the Dimensional Model       251         Solved Exercises       253   | 7 /  | •  |         |
| 7.4.2 Dimensional Modeling       222         7.5 Fact Table       225         7.5.1 Types of Fact       225         7.6 Dimension Table       229         7.6.1 Dimension Hierarchies       229         7.6.2 Types of Dimension Tables       230         7.7       Typical Dimensional Models       237         7.7.1 Star Schema       237         7.7.2 Snowflake Schema       239         7.7.3 Fact Constellation Schema       243         7.8 Dimensional Modeling Life Cycle       246         7.8.1 Requirements Gathering       247         7.8.2 Identify the Grain       249         7.8.3 Identify the Dimensions       250         7.8.4 Identify the Facts       250         Designing the Dimensional Model       251         Solved Exercises       253  | /.4  |  |         |
| 7.5       Fact Table       225         7.6       Dimension Table       229         7.6.1       Dimension Hierarchies       229         7.6.2       Types of Dimension Tables       230         7.7       Typical Dimensional Models       237         7.7.1       Star Schema       237         7.7.2       Snowflake Schema       239         7.7.3       Fact Constellation Schema       243         7.8       Dimensional Modeling Life Cycle       246         7.8.1       Requirements Gathering       247         7.8.2       Identify the Grain       249         7.8.3       Identify the Dimensions       250         7.8.4       Identify the Facts       250         Designing the Dimensional Model       251         Solved Exercises       253   |      |  |         |
| 7.5.1 Types of Fact       225         7.6 Dimension Table       229         7.6.1 Dimension Hierarchies       229         7.6.2 Types of Dimension Tables       230         7.7 Typical Dimensional Models       237         7.7.1 Star Schema       237         7.7.2 Snowflake Schema       239         7.7.3 Fact Constellation Schema       243         7.8 Dimensional Modeling Life Cycle       246         7.8.1 Requirements Gathering       247         7.8.2 Identify the Grain       249         7.8.3 Identify the Dimensions       250         7.8.4 Identify the Facts       250         Designing the Dimensional Model       251         Solved Exercises       253  |      | 8  |         |
| 7.6       Dimension Table       229         7.6.1       Dimension Hierarchies       229         7.6.2       Types of Dimension Tables       230         7.7       Typical Dimensional Models       237         7.7.1       Star Schema       239         7.7.2       Snowflake Schema       243         7.8       Dimensional Modeling Life Cycle       246         7.8.1       Requirements Gathering       247         7.8.2       Identify the Grain       249         7.8.3       Identify the Dimensions       250         7.8.4       Identify the Facts       250         Designing the Dimensional Model       251         Solved Exercises       253  | 7.5  |  |         |
| 7.6.1 Dimension Hierarchies       229         7.6.2 Types of Dimension Tables       230         7.7 Typical Dimensional Models       237         7.7.1 Star Schema       237         7.7.2 Snowflake Schema       239         7.7.3 Fact Constellation Schema       243         7.8 Dimensional Modeling Life Cycle       246         7.8.1 Requirements Gathering       247         7.8.2 Identify the Grain       249         7.8.3 Identify the Dimensions       250         7.8.4 Identify the Facts       250         Designing the Dimensional Model       251         Solved Exercises       253  |      | · · ·  |         |
| 7.6.2 Types of Dimension Tables  7.6.2 Typical Dimensional Models  7.7.1 Star Schema  7.7.2 Snowflake Schema  7.7.3 Fact Constellation Schema  7.8 Dimensional Modeling Life Cycle  7.8.1 Requirements Gathering  7.8.2 Identify the Grain  7.8.3 Identify the Dimensions  7.8.4 Identify the Facts  Designing the Dimensional Model  Solved Exercises  230  237  237  248  249  249  240  250  Designing the Dimensional Model  Solved Exercises  250   | 7.6  | Dimension Table                                |         |
| 7.7.1 Star Schema  7.7.2 Snowflake Schema  7.7.3 Fact Constellation Schema  7.8 Dimensional Modeling Life Cycle  7.8.1 Requirements Gathering  7.8.2 Identify the Grain  7.8.3 Identify the Dimensions  7.8.4 Identify the Facts  Designing the Dimensional Model  Solved Exercises  1253  1253  1257  227  227  228  229  224  227  227  228  229  229  220  220  221  227  227  228  229  229  220  220  220  221  220  221  222  223  224  225  226  227  227  227  228  229  229  220  220  220  221  220  221  222  223  224  225  226  227  227  228  229  229  220  220  220  220  220  |      | 7.6.1 Dimension Hierarchies                    |         |
| 7.7.1 Star Schema 237 7.7.2 Snowflake Schema 239 7.7.3 Fact Constellation Schema 243  7.8 Dimensional Modeling Life Cycle 7.8.1 Requirements Gathering 7.8.2 Identify the Grain 249 7.8.3 Identify the Dimensions 7.8.4 Identify the Facts Designing the Dimensional Model Solved Exercises  1253  |      | 7.6.2 Types of Dimension Tables                |         |
| 7.7.1 Star Schema 237 7.7.2 Snowflake Schema 239 7.7.3 Fact Constellation Schema 243 7.8 Dimensional Modeling Life Cycle 7.8.1 Requirements Gathering 7.8.2 Identify the Grain 7.8.3 Identify the Dimensions 7.8.4 Identify the Facts Designing the Dimensional Model Solved Exercises  Line 1. 1. 1. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2.   | 7.7  | Typical Dimensional Models                     |         |
| 7.7.2 Showfake Schema  7.7.3 Fact Constellation Schema  243  7.8 Dimensional Modeling Life Cycle  7.8.1 Requirements Gathering  7.8.2 Identify the Grain  7.8.3 Identify the Dimensions  7.8.4 Identify the Facts  Designing the Dimensional Model  Solved Exercises  Live 1. 18   |      |  |         |
| 7.7.3 Fact Constellation Schema  Dimensional Modeling Life Cycle  7.8.1 Requirements Gathering  7.8.2 Identify the Grain  7.8.3 Identify the Dimensions  7.8.4 Identify the Facts  Designing the Dimensional Model  Solved Exercises  Line 1. 18   |      | 7.7.2 Snowflake Schema                         | 239     |
| 7.8 Dimensional Modeling Life Cycle  7.8.1 Requirements Gathering  7.8.2 Identify the Grain  7.8.3 Identify the Dimensions  7.8.4 Identify the Facts  Designing the Dimensional Model  Solved Exercises  Line 1 18   |      |  | 243     |
| 7.8.1 Requirements Gathering 7.8.2 Identify the Grain 7.8.3 Identify the Dimensions 7.8.4 Identify the Facts Designing the Dimensional Model Solved Exercises  Line 1. 18  | 7.8  | Dimensional Modeling Life Cycle                | 246     |
| 7.8.2 Identify the Grain 7.8.3 Identify the Dimensions 7.8.4 Identify the Facts Designing the Dimensional Model Solved Exercises  Line 1. 18   |      | 7.8.1 Requirements Gathering                   | 247     |
| 7.8.3 Identify the Dimensions 7.8.4 Identify the Facts Designing the Dimensional Model Solved Exercises  Line 1 18   |      | 7.8.2 Identify the Grain                       | 249     |
| Designing the Dimensional Model  Solved Exercises  Line 1 1 1 253  |      | 7.8.3 Identify the Dimensions                  | 250     |
| Solved Exercises  Line 1 - 1 - 251   |      | 7.0.4 Identity the Facts                       | 250     |
| Line 1 1 P   |      | Designing the Dimensional Mad 1                | 251     |
| II and the   |      | Solved Exercises                               |         |
|  |      | Unsolved Exercises                             |         |

| Contents |  |  |
|----------|--|--|
|          |  |  |

| Measures, Metrics, KPIs, and Performance Management  | 257   |
|--|---|
| Brief Contents   |   |
| What's in Store  | 257<br>257  |
| Understanding Measures and Performance   | 257<br>258  |
| Measurement System Terminology   | 258   |
| Navigating a Business Enterprise, Role of Metrics, and Metrics Supply Chain  | 259   |
| "Fact-Based Decision Making" and KPIs  | 264   |
| KPI Usage in Companies   | 266   |
| Where do Business Metrics and KPIs Come From?  | 267   |
| Connecting the Dots: Measures to Business Decisions and Beyond   | 268   |
| · · · · · · · · · · · · · · · · · · ·  | 269   |
| Unsolved Exercises   | 270   |
| Basics of Enterprise Reporting   | 273   |
| Brief Contents   | 273   |
| What's in Store  | 273   |
| Reporting Perspectives Common to All Levels of Enterprise  | 274   |
| Report Standardization and Presentation Practices  | 275   |
| 9.2.1 Common Report Layout Types   | 277   |
| 9.2.2 Report Delivery Formats  | 280   |
| Enterprise Reporting Characteristics in OLAP World   | 28  |
| Balanced Scorecard   | 282   |
| 9.4.1 Four Perspectives of Balanced Scorecard  | 28.   |
| 9.4.2 Balanced Scorecard as Strategy Map   | 28  |
| 9.4.3 Measurement System   | 28  |
| 9.4.4 Balanced Scorecard as a Management System  | 28  |
| Dashboards   | 29  |
| 9.5.1 What are Dashboards?   | 29  |
| 9.5.2 Why Enterprises Need Dashboards?   | 29  |
| 9.5.3 Types of Dashboard   | 29  |
| How Do You Create Dashboards?  | 29  |
| 9.6.1 Steps for Creating Dashboards  | 29  |
| . ,  | 29  |
| •  | 29  |
|  | 29  |
|  | 29  |
|  | 29  |
| · · · · · · · · · · · · · · · · · · ·  | 29  |
|  | 30  |
| the contract of the contract o | 30  |
|  | 30  |
|  | What's in Store Understanding Measures and Performance Measurement System Terminology Navigating a Business Enterprise, Role of Metrics, and Metrics Supply Chain "Fact-Based Decision Making" and KPIs KPI Usage in Companies Where do Business Metrics and KPIs Come From? Connecting the Dots: Measures to Business Decisions and Beyond Summary Unsolved Exercises  Basics of Enterprise Reporting  Brief Contents What's in Store Reporting Perspectives Common to All Levels of Enterprise Report Standardization and Presentation Practices 9.2.1 Common Report Layout Types 9.2.2 Report Delivery Formats Enterprise Reporting Characteristics in OLAP World Balanced Scorecard 9.4.1 Four Perspectives of Balanced Scorecard 9.4.2 Balanced Scorecard as Strategy Map 9.4.3 Measurement System 9.4.4 Balanced Scorecard as a Management System Dashboards 9.5.1 What are Dashboards? 9.5.2 Why Enterprises Need Dashboards? 9.5.3 Types of Dashboard |

| 10   | Understanding Statistics   | Conton                             |
|------|--|------------------------------------|
|      | Brief Contents   |                                    |
|      | What's in Store?   | 30, —                              |
| 10.1 | Role of Statistics in Analytics  | 30)                                |
| 10.2 | Data, Data Description and Summarization   | 30)                                |
|      | 10.2.1 Getting to Describe "Categorical Data"  | 300                                |
|      | 10.2.2 Getting to Describe "Numerical Data"  | $\frac{31}{3}$ 12.                 |
|      | 10.2.3 Association between Categorical Variables   | 3]]                                |
|      | 10.2.4 Association between Quantitative Variables  | 3 <sub>14</sub><br>3 <sub>16</sub> |
| 10.3 | Statistical Tests  | 316                                |
|      | 10.3.1 Paired and Unpaired Data Sets   | 319                                |
|      | 10.3.2 Matched Pair Groups in Data Sets  | 319                                |
|      | 10.3.3 Common Statistical Testing Scenarios  | 319                                |
| 10.4 | Understanding Hypothesis and t-Test  | 320 1                              |
|      | 10.4.1 The t-Test  | 321                                |
|      | 10.4.2 The p-Value   | 322                                |
|      | 10.4.3 Z-Test  | 322                                |
| 10.5 | Correlation Analysis   | 322                                |
| 10.6 | Regression   | 323                                |
| 10.7 | ANOVA  | 324                                |
| 10.8 | The F-Test   | 325                                |
| 10.9 | Time Series Analysis   | 325                                |
|      |  | 327                                |
| 11   | Application of Analytics   | 331                                |
|      | Brief Contents   | 331                                |
|      | What's in Store?   | 331                                |
| 11.1 | Application of Analytics   | 331                                |
| 11.1 | 11.1.1 Analytics in Business Support Functions   | 332                                |
| 11.2 | Analytics in Industries  | 334                                |
| 11.2 | 11.2.1 Analytics in Telecom  | 334                                |
|      |  | 335                                |
|      | 11.2.2 Analytics in Retail  11.2.3 Analytics in Healthcare (Hospitals on Healthcare Providers) | 337                                |
|      | 11.2.3 Analytics in Healthcare (Hospitals or Healthcare Providers)                             | 338                                |
|      | 11.2.4 Analytical Application Development  | 339                                |
| 11.3 | Widely Used Application of Analytics   | 339                                |
|      | 11.3.1 Anatomy of Social Media Analytics   | 342                                |
|      | 11.3.2 Anatomy of Recommendation Systems   | 343                                |
|      | 11.3.3 Components of Recommendation Systems  |                                    |
|      |  | 347                                |
| 12   | Data Mining Algorithms   | 347                                |
|      | Brief Contents   | 347                                |
|      | What's in Store?   | 347                                |
| 12.1 | Association Rule Mining  | 349                                |
|      | 12.1.1 Binary Representation   |                                    |

|          |  | • xxiii |
|----------|--|---------|
|          | 12.1.2 Itemset and Support Count                         | 350     |
|          | 12.1.3 Implementation in R                               | 351     |
| 12.2     | k-Means Clustering                                       | 355     |
| 12.2     | 12.2.1 Implementation in R                               | 356     |
| 12.3     | Decision Tree  | 357     |
|          | 12.3.1 What is a Decision Tree?                          | 360     |
|          | 12.3.2 Where is it Used?                                 | 361     |
|          | 12.3.3 Advantages from Using a Decision Tree             | 361     |
|          | 12.3.4 Disadvantages of Decision Trees                   | 361     |
|          | 12.3.5 Decision Tree in R                                | 361     |
|          | Unsolved Exercises                                       | 367     |
| 13       | BI Road Ahead  | 369     |
|          | Brief Contents   | 369     |
|          | What's in Store  | 369     |
| 13.1     | Understanding BI and Mobility                            | 369     |
|          | 13.1.1 The Need for Business Intelligence on the Move    | 370     |
|          | 13.1.2 BI Mobility Timeline                              | 370     |
|          | 13.1.3 Data Security Concerns for Mobile BI              | 373     |
| 13.2     | BI and Cloud Computing                                   | 373     |
|          | 13.2.1 What is Cloud Computing?                          | 373     |
|          | 13.2.2 Why Cloud Computing?                              | 375     |
|          | 13.2.3 Why Business Intelligence should be on the Cloud? | 375     |
| 13.3     | Business Intelligence for ERP Systems                    | 377     |
|          | 13.3.1 Why BI in ERP?                                    | 378     |
|          | 13.3.2 Benefits of BI in ERP                             | 379     |
|          | 13.3.3 ERP Plus BI Equals More Value                     | 379     |
| 13.4     | Social CRM and BI  | 380     |
| 13.1     | Unsolved Exercises                                       | 384     |
| Glossary | ,<br><b>7</b>  | 385     |
| Index    |  | 397     |



# Sales and Distribution Management

A Practice-Based Approach



Ramendra Singh

#### **TABLE OF CONTENTS**

| Foreword         |  | xiii |
|------------------|--|------|
| Preface          |  | xv   |
|                  | PART A: SALES MANAGEMENT                         | 1    |
| Chapter 1        | An Introduction to Sales and Distribution        |      |
|                  | Channel Management                               | _ 1  |
| Sales and Distr  | ribution Management: A Few Introductory Insights | 2    |
| Chapter 2        | Personal Selling                                 | 5    |
| Case Example     | 1: Selling a Car (Car Dealer)                    | 6    |
| Case Example     | 2: Selling Office Space (Real Estate Industry)   | 8    |
| Types of Sellin  |  | 10   |
| Personal So      | 9  | 11   |
|                  | elling Process                                   | 14   |
| ,                | Behaviours, and Attitudes                        | 23   |
|                  | siness Buying and Selling Process                | 27   |
| Buying Cer       |  | 27   |
| •                | onal Buying Stages                               | 28   |
|                  | nal Selling Through Distribution Channels        |      |
| in FMCG Co       | -  | 15   |
|                  | Selling—Case of Eureka Forbes                    | 16   |
|                  | and Ladders in Sales                             | 23   |
| Chapter Summo    | ary  | 29   |
| Quiz Questions   |  | 29   |
| _                | nents and Worksheets                             | 30   |
| -                | ling Personal Computers to Management Institute  | 33   |
| References       |  | 35   |
| Chapter 3        | Sales Organization                               | 36   |
| Case Example:    | Sales Re-Organization at IBM                     | 37   |
|                  | Organizations?                                   | 38   |
| Types of Sales ( |  | 40   |

| lable of Contents  |          |
|--|----------|
| Functional-Type Organization   |          |
| Geographic-Type Organization   |          |
| Customer-Type Organization   |          |
| Product-Type Organization  | 41       |
| Principles for Organization  | 43<br>43 |
| Chapter Summary  | 44       |
| Quiz Questions   | 45       |
| Chapter 4 Sales Technology   | 48       |
|  | 48       |
| Case Example 1: Use of IT in FMCG Channel Selling at ITC Case Example 2: Asian Paints Sales M                  | 51       |
| Case Example 2: Asian Paints Sales Management Information Systems (MIS)  | 52       |
| Why Sales Force Automation?  |          |
| Lead Generation and Online   | 53       |
| Lead Generation and Qualification Knowledge  | 54       |
| Sales Presentation Skills  | 55       |
|  | 56       |
| Call Productivity  | 56<br>56 |
| Sales Technology as a Management Tool  | 57       |
| Adoption of Sales Technology: Impediments and How to Tackle Them   | ,        |
|  | 58       |
| SFA Technologies   | 60       |
| Handheld Terminals (HHTs)  | 60       |
| Distributor Point Software   | 60       |
| Business Intelligence App  | 60       |
| Territory Sales Officer's Tool   | 61<br>61 |
| Use of Sales Force Technology in FMCG Companies  | 66       |
| Chapter Summary  | 66       |
| Quiz Questions   | 67       |
| Project Assignments and Worksheets   | 68       |
| Case Study 1: Sales Force Automation at Dr. Reddy's Laboratory   |          |
| Case Study 2: Automotive Distribution Channel and  | 71       |
| Use of SFA   | 77       |
| References   | 70       |
|  | 79       |
| Chapter 5 Sales Territory and Time Management  | 80       |
| Chapter 5 Sales Territory Planning and Quota Setting  Case Example: Sales Territory Planning and Quota Setting | 81       |
| in New Territories <sup>©</sup>  | 82       |
| TITLE Color Territories?   | 83       |
|  | 83       |
| Providing Proper Market Coverage  Improving Customer Service and Relationships  Service Services               | 84       |
| Improving Customer Selling Expenses  | 8        |
| Controlling Selling Expenses  Travel Time  |          |
| Reducing Travel Time Objective Evaluation of Sales Performance and Control                                     |          |
| Objective Evaluation of Survey   |          |

T

| Table of Contents   |   |
|---|---|
| Improving Sales Force Motivations                                     | 85                                      |
| Coordinating Personal Selling and Marketing                           | 85                                      |
| Territory Design Procedures   | 85                                      |
| Step 1: Selecting Geographic Control Unit                             | 85                                      |
| Step 2: Allocation Criteria   | 86<br>87                                |
| Step 3: Choose the Starting Point                                     | 87                                      |
| Step 4: Combine Adjacent Control Unit                                 | 89                                      |
| Step 5: Compare Sales Territories                                     | 89                                      |
| Step 6: Assign Salespersons to New Territories                        | 90                                      |
| Sales Force Sizing  | 94                                      |
| Common Mistakes when Sizing Sales Force                               | 95                                      |
| Sales Quotas  | 96                                      |
| Setting Quotas  | 97                                      |
| Time Management   | 100                                     |
| Chapter Summary   | 100                                     |
| Box 5.1 Salesperson's Satisfaction with Territory Design              | 101                                     |
| Quiz Questions  | 103                                     |
| Case Study: Sales Beat Optimization of HUL Sales Territory in Kolkata | 109                                     |
| References  | • |
| Chapter 6 Sales Force Recruitment and Training                        | 110                                     |
| Case Example 1: Talent Development at Colgate Palmolive               | 111                                     |
| Case Example 2: Hiring a New Salesperson                              | 112                                     |
| Sales Force Recruitment and Selection                                 | 113                                     |
| Recruitment and Selection Issues                                      | 113                                     |
| Recruiting and Selecting Salespeople                                  | 114                                     |
| Job Analysis and Selection Criteria                                   | 114                                     |
| Recruiting Applicants   | 115                                     |
| Selection Procedure   | 116                                     |
| Guideline for the Appropriate Use of Tests                            | 117                                     |
| Box 6.1 Hire to Fry, Not Fire   | 119                                     |
| Sales Force Training  | 120                                     |
| Assessment of Training Needs  | 121                                     |
| Setting Training Objectives   | 122                                     |
| Evaluating Training Alternatives                                      | 122                                     |
| Designing and Delivering Training Programmes                          | 123                                     |
| Training Programme Evaluation and Follow-Up                           | 124                                     |
| Box 6.2 Learning and Development                                      | 125                                     |
| Learning and Development Environment and its Impact                   | 127                                     |
| Box 6.3 Listening with Your Eyes                                      | 128                                     |
| Emotions Expressed through Facial Expressions                         | 129                                     |
| Measuring Sales Training Effectiveness                                | 131                                     |
| Perceived Sales Force Performance Scale (PSFP)                        |   |
| (Adapted from Berhman and Perreault, 1982)                            | 133                                     |
| (Adapted from Derminan and Ferroduct, 1902)                           |   |

| Current Sales Training Practices Index (CSTPI) By Jantan (2000)    | 134        |
|--|------------|
| Sales Training Needs Determination (STND)                          | 134        |
| Sales Training Objective Setting (STOS)                            | 134        |
| Sales Training Programme Methods (STPM)                            | 134        |
| Sales Training Programme Content (STPC)                            | 135        |
| Sales Training Evaluation (STE)                                    | 135        |
| Chapter Summary  | 136        |
| Quiz Questions   | 136        |
| Project Assignments and Worksheets                                 | 137        |
| References   | 139        |
| Chapter 7 Sales Force Motivation and Compensation                  | 141        |
| Case Example 1: Pharma Talent—Paying Sales Force                   |            |
| Bonuses with Fixed Budget  | 142        |
| Case Example 2: Sales Performance for Fair Compensation at Pharmex | 144        |
| Case Example 3: Eureka Forbes Limited—Managing Sales               |            |
| Force Motivation   | 146        |
| Importance of Sales Force Motivation                               | 147        |
| Theories of Sales Force Motivation                                 | 149        |
| Theories of Sales Force Wordsan's Career in Sales                  | 152        |
| Box 7.1 Case Study: Sandeep's Career in Sales                      | 152        |
| Sales Force Compensation   |            |
| Box 7.2 Case Study: Sales Force Motivation and Compensation        | 156        |
| Strategies for a Large Sales Force                                 | 158        |
| Chapter Summary  | 159        |
| Quiz Questions   | 160        |
| Project Assignments and Worksheets                                 | 164        |
| Case Study: A Day in the Life of a Salesperson                     | 171        |
| References   |            |
| Chapter 8 Sales Force Productivity and Performance                 | 172<br>173 |
| Case Example: Eureka Forbes—Sales Productivity Issues              | 17-        |
| What is Sales Force Productivity?                                  | 17-        |
| Box 8.1 The Point of Purchase                                      | 170        |
| What are the Factors Affecting Sales Force Performance?            | 180        |
| Situational Factors  |            |
| Knowledge  | 18<br>18   |
| Customer-Oriented Selling and Sales Performance                    | 18         |
| SOCO Scale   | 18         |
|  |            |
| Customer Orientation   | 18         |
| Salespeople's Performance Orientation                              | 18         |
| Examples of Sales Force Productivity                               | 18         |
| Box 8.2 Sales Performance  | 18         |
| Chapter Summary  | 18         |
| Quiz Questions   |            |

| Table of Contents  | The state of the s |
|--|--|
| Project Assignments and Worksheets                                 | 190  |
| References   | 190  |
| Chapter 9 Selling Ethics   | 192  |
| Case Example 1: The Shoe that Pinches                              | 193  |
| Case Example 2: Every Day in the Life of a Salesperson             | 193  |
| What are Ethics and What is the Importance of Ethics in Selling?   | 195  |
| Ethical Dilemmas in Selling  | 198  |
| Some Ethical Dilemmas and Overcoming These                         | 199  |
| Box 9.1 The Sales Kit  | 201  |
| Chapter Summary  | 202  |
| Ouiz Questions   | 202  |
| Project Assignments and Worksheets                                 | 204  |
| References   | 205  |
| PART B: DISTRIBUTION MANAGEMENT                                    | 206  |
| Chapter 10 Sales-Marketing Interfaces                              | 206  |
| Case Example: Yogesh's Dilemma                                     | 207  |
| Why are Sales and Marketing Different?                             | 207  |
| How do the Sales and the Marketing Functions Interact?             | 208  |
| Managing Seamless Sales-Marketing Integration                      | 210  |
| Chapter Summary  | 213  |
| Quiz Questions   | 214  |
| Project Assignments and Worksheets                                 | 215  |
| References   | 217  |
| Chapter 11 Distribution Channel Design                             | 218  |
| Case Example 1: Ingersoll Rand (I-R) and Inter-Channel Competition | 219  |
| Case Example 2: Warehousing of Online Fashion Retailers            | 220  |
| Case Example 3: Distribution Network of Nokia Mobile Handsets      | 221  |
| What are Distribution Channels?                                    | 225  |
| Why are Distribution Channels Required?                            | 228  |
| Roles of Channel Partners in a Distribution Channel                | 230  |
| Carrying and Forwarding Agents (C&F Agents)                        | 230  |
| Distributors   | 230  |
| Retailers  | 231  |
| Wholesalers  | 232  |
| Logistics  | 241  |
| Trade Merchandizing  | 243  |
| Chapter Summary  | 246  |
| Quiz Questions   | 246  |
| Project Assignments and Worksheets                                 | 248  |

| Chapter 12 Distribution Channel Power and Relationships  | 2-                                 |
|--|------------------------------------|
| Chapter 12 Distribution Channel Tower and Relationships  Case Example: Distribution System and Channel Relationships | 254                                |
| in Indian Newspaper Industry   | •                                  |
| was a Channel Power?   | 255<br>25                          |
| What is Channel Tower? What are the Various Sources of Channel Power?  | 25 <sub>6</sub>                    |
| What are Channel Conflicts?  | 258                                |
| Chapter Summary  | 26 <sub>1</sub><br>26 <sub>4</sub> |
| Quiz Questions   | 264<br>264                         |
| Project Assignments and Worksheets   | 266                                |
| Case Study 1: Parmeet Oil Company  | 268                                |
| Case Study 2: Fish Distribution System in West Bengal  | 269                                |
| Chapter 13 Trade Loyalty Programmes  | 276                                |
| Case Example: HUL's Wholesale Loyalty Programme-Vijeyta  | 277                                |
| What is Trade Loyalty and What are the Payoffs?  | 278                                |
| What are the Various Types of Trade Loyalty Programmes?  | 281                                |
| Retailer Loyalty Programme   | 282                                |
| Evaluation of Trade Loyalty Programmes   | 283                                |
| How to Design a Good Trade Loyalty Programme?  | 285                                |
| Chapter Summary  | 285                                |
| Quiz Questions   | 286                                |
| Project Assignments and Worksheets   | 287                                |
| Chapter 14 Channel Economics   | 289                                |
| Case Example 1: Return on Investment for Prashant Enterprises  | 290                                |
| Case Example 2: Your First Date with the Distributor   | 290                                |
| Channel Economics: Its Components  | 291                                |
| Trade Economics  | 291                                |
| Mark-ups and Mark-downs  | 292                                |
| Distribution Economics   | 292                                |
|  | 297                                |
| Inventory Management   | 298                                |
| Inventory Planning   | 299                                |
| Stock Turnover Ratio (STR)   | 300                                |
| Receivables Management   | 301                                |
| Project Assignments and Worksheets   | 304                                |
| Case Study 1: Pet Main Dakar   | 305                                |
| Case Study 2: Bondage  | -00                                |
| Chamber 15 Dec 11  | 309                                |
| Chapter 15 Retailing   | 310                                |
| Case Example: Creating Buzz in Rural Large Retail Formats  | 313                                |
| What is Retailing?   | 319                                |
| Forms of Retailing   | 321                                |
| Retailing Economics  |                                    |

Sl

| Table of Contents   | xi  |
|---|-----|
| Shopper Marketing   | 325 |
| Online Retailing  | 330 |
| Flash Sale  | 334 |
| Chapter Summary   | 335 |
| Ouiz Ouestions  | 335 |
| Project Assignments and Worksheets                          | 336 |
| PART C: CASES IN SALES AND                                  |     |
| DISTRIBUTION MANAGEMENT                                     | 338 |
| Topic: Selling in Distribution Channels                     | 338 |
| Case 1: Is Anandam a Good Sales Man?                        | 338 |
| Topic: Sales/Trade Promotions                               | 339 |
| Case 2: Sri Maruti Bakers–Returns Blues                     | 339 |
| Topic: Managing Sales Organization                          | 340 |
| Case 3: Impex–Restructuring Sales Organization              | 340 |
| Topic: Online Retailing                                     | 351 |
| Case 4: Flipkart.com: India's Most Successful Book E-Tailer | 351 |
| Topic: Distribution Channel Conflict                        | 365 |
| Case 5: Prabhar Oil Company                                 | 365 |
| Topic: Sales Force Training and Compensation                | 372 |
| Case 6: Training and Compensating the Field Force           | 372 |
| Topic: Customer-Oriented Selling                            | 373 |
| Case 7: Complaining Customer                                | 373 |
| Topic: Sales force Resistance                               | 374 |
| Case-8: Launching a Window Awning                           | 374 |
| Topic: Managing Sales Career                                | 375 |
| Case 9: Sandeep's Career in Sales                           | 375 |
| Topic: Sales Territory Planning and Quota Setting           | 375 |
| Case 10: Selling PCS in Behala, Kolkata                     | 375 |
| Topic: Outsourcing Sales Staffing                           | 377 |
| Case 11: Adecco and Outsourced Sales Force                  | 377 |
| Topic: Logistics and Supply Chain                           | 379 |
| Case 12: Uttarakhand State Cooperative Federation:          |     |
| Can It Help The Horticulture Farmers?                       | 379 |
| Topic: Navigating the Selling Process                       | 391 |
| Case 13: Selling Process @ Omnitech Informatics             | 391 |
| Topic: Selling Skills and Sales Process                     | 395 |
| Case 14: A Day in the Life of a Voltas Salesperson          | 395 |
| Topic: Sales Force Size Estimation                          | 400 |
| Case 15: ZS Associates-Sales Force Sizing                   | 400 |
| Topic: Sales Accounting and Audit                           | 401 |
| Case 16: Sales or No-Sales                                  | 401 |

Index

| Topic: FMCG Distribution Challenges   | 402 |
|---|-----|
| Cons 17: Astra Foods India: Seiling and Distribution  | 402 |
| Tanic: Influence of Salespersons in Customer Interactions   | 405 |
| Case 18: Consumer Insights at Moments of Truth  | 405 |
| Topic: FMCG Distribution  | 408 |
| Case 19: Comparative Analysis of FMCG Distributors  | 408 |
| Topic: Rural Retailing  | 411 |
| Case 20: Hariyali Kisaan Bazaar   | 411 |
| Topic: Informal (Roadside) Retailing  | 411 |
| Case 21: Rambhai Kettley  | 411 |
| Topic: Distribution in Bottom of Pyramid  | 412 |
| Case 22: Chotukool from Godrej  | 412 |
| Topic: Organized Retailing and Retail Salesperson   | 413 |
| Case 23: One Evening in a Shopping Mall   | 413 |
| Topic: Sales and Distribution Strategy for New Product-Markets  | 418 |
| Case 24: Developing a Market for Compost in India   | 418 |
| Topic: Servicing through Distribution Channels  | 426 |
| Case 25: Cosmos Service Centre  | 426 |
| Topic: Comparison of Parallel Distribution Systems  | 440 |
| Case 26: HUL and the Salt Distribution Model  | 440 |
| Topic: Shelf Space Management in Department Store   | 445 |
| Case 27: The Picture Case on Shelf Space  | 445 |
| Topic: Rural Distribution Channel Design and Scaling Challenges   | 449 |
| Case 28: O'nergy Distribution Channel in Rural Eastern India  | 449 |
| Topic: Vendor Based Distribution  | 453 |
| Case 29: Distribution Channel of the Times of India in Kolkata  | 453 |
|   | 458 |
| Topic: Management Case  | 458 |
| Case 30: Makemytrip.com (A)   | 478 |
| Topic: Management Case  | 478 |
| Case 31: Planet Health  | 503 |
| Simulation Games  | 519 |
| Distribution Challenges and Workable Solutions  | 549 |
| Question Bank   | 569 |
| A management and a second a second and a second and a second and a second and a second a second and a second a second and a second and a second and | 507 |



# **BUSINESS LAW**





P C Tulsian Bharat Tulsian

3e

# Contents

| D <sub>y</sub> | eface | ρ  | ν          |
|----------------|-------|--|------------|
|                | *     | wledgements  | vii        |
|                |       | THE INDIAN CONTRACT ACT, 1872                        |            |
|                | 1     | Meaning and Essentials of Contract                   | 1.1—1.18   |
|                |       | Offer and Acceptance                                 | 2.1-2.26   |
|                |       | Capacity of Parties                                  | 3.1—3.13   |
|                |       | Consideration  | 4.1—4.12   |
|                |       | Free Consent   | 5.1—5.28   |
|                |       | Legality of Object and Consideration, and Agreements |            |
|                | ٠.    | Opposed to Public Policy                             | 6.1—6.10   |
|                | 7.    | Void Agreement and Contingent Contracts              | 7.1—7.21   |
|                |       | Performance of a Contract                            | 8.1—8.21   |
|                | -     | Discharge of a Contract                              | 9.1—9.15   |
|                |       | Remedies for Breach of Contract                      | 10.1—10.17 |
|                |       | Quasi-Contracts                                      | 11.1—11.9  |
|                |       | Indemnity and Guarantee                              | 12.1—12.25 |
|                |       | Bailment and Pledge                                  | 13.1—13.28 |
|                |       | Contract of Agency                                   | 14.1—14.40 |
|                |       | THE SALE OF GOODS ACT, 1930                          |            |
|                | 15.   | The Sale of Goods Act, 1930                          | 15.1—15.71 |
|                |       | THE INDIAN PARTNERSHIP ACT, 1932                     |            |
|                | 16.   | The Indian Partnership Act, 1932                     | 16.1—16.81 |
|                |       | THE NEGOTIABLE INSTRUMENTS ACT, 1881 (PART I)        |            |
|                | 17.   | The Negotiable Instruments Act, 1881 (Part I)        | 17.1—17.66 |
|                |       | THE NEGOTIABLE INSTRUMENTS ACT, 1881 (PART II)       |            |
|                | 10    | The Negotiable Instruments Act. 1881 (Part II)       | 18.1—18.27 |
|                | 10.   | THE NEGOTIABLE INSTRUMENTS ACL. 1861 (PART II)       |            |

# THE LIMITED LIABILITY PARTNERSHIP ACT, 2008

19. The Limited Liability Partnership Act, 2008

19.1—19.31

## THE INFORMATION TECHNOLOGY ACT, 2000

20. The Information Technology Act, 2000

20.1-20.53

ADVERTISING, PROMOTION, AND MARKETING COMMUNICATIONS

Sixth Edition

Kenneth E. Clow I Donald E. Baack



# **Table of Contents**

| 1. Integrated Marketing Communications                                | 1   |
|---|-----|
| 2. Corporate Image and Brand Management                               | 25  |
| 3. Buyer Behaviors  | 55  |
| 4. The IMC Planning Process   | 89  |
| 5. Advertising Management   | 123 |
| 6. Advertising Design - Theoretical Frameworks and Types of Appeals   | 155 |
| 7. Advertising Design - Message Strategies and Executional Frameworks | 189 |
| 3. Traditional Media Channels   | 223 |
| 9. Digital Marketing  | 259 |
| 0. Database and Direct Response Marketing and Personal Selling        | 293 |
| 1. Sales Promotions   | 325 |

| 12. Public Relations and Sponsorship Programs  | 355 |
|--|-----|
| 13. Regulations and Ethical Concerns           | 385 |
| 14. Evaluating an Integrated Marketing Program | 415 |
| Index  | 445 |



#### LOW PRICED STUDENTS' PAPERBACK EDITION



# BANKING THEORY AND PRACTICE



K C Shekhar Lekshmy Shekhar

# CONTENTS

Preface v-viii

1. EVOLUTION OF BANKING INSTITUTIONS

1-3

#### PART I: COMMERCIAL BANKING THEORY

2. COMMERCIAL BANKING

7-32

Functions of Commercial Banks and the Services Rendered by Them

Agency Services; General Utility Services

General Structure and Methods of Commercial Banking

Certain Sound Commercial Banking Principles; Employment of Funds by Commercial Banks; Earning Assets of a Bank; Self Liquidating Paper Theory vs Anticipated Income

Theory

Mechanism of Credit Creation

Limitations on Creation of Credit

The Clearing House System

Systems of Banking

Group Banking and Chain Banking; Unit Banking and Branch Banking

Investment Banking and Mixed Banking

Universal Banking

Merchant Banking

Virtual Banking

Green Banking

#### PART II: CENTRAL BANKING THEORY

3. CENTRAL BANKING

35-65

Functions of a Central Bank

Monopoly of Note Issue

Note Issue and the State; Principles of Note Issue; Systems of Note Issue; Reserve Requirements and Currency Regulation

Monetary Policy

 ${\color{blue} \textbf{Objectives;} Instruments of Monetary Policy; Practical Difficulties; Bank Rate Policy; Open } \\$ 

Market Operations; Variable Reserve Ratio; Secondary Reserve Requirements

Qualitative Instruments of Monetary Policy

Credit Rationing; Direct Action—Moral Suasion—Publicity; Selective Credit Controls

As Banker and Advisor of the State

As Bankers' Bank and Lender of Last Resort

As Central Bank of Clearance; As Regulator of Banks

As Custodian of Nation's Reserves

Recent Trends in Central Banking

Transparency in Monetary Policy; State and the Central Bank; Central Bank and Economic Development; With Particular Reference to Developing Economies

#### PART III: INDIAN BANKING

#### 4. THE INDIAN JOINT-STOCK BANKS

69-132

#### Indian Joint-stock Banks and Branch Banking

Lead Bank Scheme

Foreign Branches of Indian Banks; Bank Mergers and Amalgamations; Growth in **Deposits** 

Capital Funds

Diversification in Banking Activities

Banks' Entry into Insurance Business; Developments in Retail Banking; Housing Finance; Banks' Investment in Capital Market; Formation of Other Subsidiaries for Para-banking Activities; Equity Investment in Commodity Exchange; Clearing Corporation; Technological Developments in Banks; Speed Clearing

Financial Innovations

Take-out Finance; Securitization; Reverse Mortgage Loans

Flexi Bank Account

Asset Structure of Indian Joint-stock Banks

Cash in Hand, Balances with Banks and Loans-at-call and Short Notice; Bills Purchased and Discounted; Investments; Loans and Advances

APPENDIX: Master Circular on Branch Licensing (July 2004); Master Circular on Branch Licensing in Respect of Regional Rural Banks (Till July 2008); Mergers and Acquisitions in Banking: International Experience and Indian Evidence; Strategies for Strengthening Weak Banks: Cross-country Experience; Insurance and Banking: Issues of Overlap; Securitization; Take-out Finance

#### 5. COMMERCIAL BANKS AND INDUSTRIAL FINANCE

133-167

Sectoral Deployment of Credit **Exposure Norms** 

Term Lending

Term Lending in India; Can Term Credits be Endowed with Liquidity?; Inter-institutional Group on Lending Operations; Consortium/Participation Arrangements; Syndicated Loan System; Participation Certificates; Mutual Funds; Financing of Sick Industrial Units

Role of Banks in Export Promotion

Toda Report on the Export Credit System

Report of the Working Group to Review Export Credit

Meetings of the Working Group; Banks and Export Insurance

The Export Import Bank of India (EXIM Bank)

Financial Institutions: Role of Commercial Banks and Related Matters Classification of Financial Institutions; Industrial Finance Corporation of India; State Financial Corporations; Unit Trust of India; The Industrial Development Bank of India; National Housing Bank

Regulatory and Supervisory Framework

Coordination between Banks and Financial Institutions

Harmonization of the Role of Banks and Development Financial Institutions

Universal Banking

APPENDIX: Issues of Co-ordination between Banks and Financial Institutions; Universal Banking: Supervisory and Regulatory Aspects; Discussion Paper

#### 6. COMMERCIAL BANKS AND PRIORITY SECTORS

168-220

Classification of Priority Sector Advances

Agriculture; Small-scale Industries; Other Activities/Borrowers in the Priority Sector

Certain Types of Funds Deployment Eligible as Priority Sector

Investment in Special Bonds; Other Investments; Lines of Credit; Bills Rediscounting; Deposits in Rural Infrastructure Development Fund, Leasing and Hire Purchase

Targets for Priority Sector Lending by Scheduled Commercial Banks

(Excluding RRBs)

Main targets for Scheduled Commercial Banks; Sub-targets for All Scheduled Commercial Banks Excluding Foreign Banks; Targets for Foreign Banks; Deposits by Foreign Banks with SIDBI Towards Shortfall in Priority Sector Lending; Contribution by Banks to Rural Infrastructure Development Fund

Common Guidelines for Priority Sector Advances

Processing of Applications; Mode of Disbursement of Loan; Repayment Schedule; Rates of Interest; Penal Interest; Inspection Charges; Insurance Against Fire and Other Risks; Other Charges; Photographs of Borrowers; Discretionary Powers; Machinery to Look into Complaints; Amendments; Revision to the Guidelines

Financial Inclusion

'No-Frills' Accounts; General-purpose Credit Cards; Pilot Project for 100 per cent Financial Inclusion; Financial Inclusion Fund and Financial Inclusion Technology Fund

Commercial Banks and Agricultural Finance

Financing of Primary Agricultural Credit Societies (PACSs) by Commercial Banks; Action Taken on Gupta Committee Report; Integrated Rural Development Programme (IRDP); Swarnajayanti Gram Swarozgar Yojana (SGSY); Micro Credit by Banks; Recent Developments; Special Agricultural Credit Plans (SACP); Simplification of Processes and Procedures; Relief Measures for Agriculture-Interest Rate Subvention; Recommendations of the Radhakrishna Expert Group on Agricultural Indebtedness; Agricultural Debt Waiver and Debt Relief Scheme, 2008

Commercial Banks and Small-scale Industries

Prime Minister's Rozgar Yojana; Swarna Jayanti Shahari Rozgar Yojana (SSRY); Credit to Micro, Small and Medium Enterprises (MSME) Sector

Master Circular Lending to Micro, Small and Medium Enterprises (MSME)

State Level Inter Institutional Committee; Empowered Committee on MSMEs; Debt Restructuring Mechanism for MSMEs; Cluster Approach; Committees on flow of Credit to MSE sector, Banking Codes and Standard Board of India (BCSBI); Credit to Khadi and Village Industries Commission; Scheme for Guarantee of Loans and Advances to SSIs; Credit Guarantee Scheme for Small Borrowers; Differential Interest Rate; Lead Bank Scheme; Small Industries Development Bank of India (SIDBI); Recent Developments in SSI Sector Lending

#### 7. BANKING LEGISLATIONS AND REFORMS I

221-287

Banking Regulation Act, 1949

Banking Companies and the Reserve Bank of India; The Banking Companies (Amendment) Act, 1960; The Banking Companies (Second Amendment) Act, 1960; The Banking Companies (Amendment) Act, 1961; Banking Companies (Amendment) Act, 1962; The Banking Laws (Miscellaneous Provisions) Act, 1963; Banking Laws (Application to Cooperative Societies) Act, 1966; Deposit Insurance Corporation Act, 1962

Social Control Over Banks

The Banking Laws (Amendment) Act, 1968

Nationalization of Commercial Banks

Banking Companies (Acquisition of Undertakings) Act, 1970; Second Phase of Nationalization; Achievements; Nationalized Banks and Branch Expansion; Nationalized Banks and Priority Sectors; Capital Adequacy; Banking Companies (Acquisition and Transfer of Undertakings) (Amendment) Act, 1994; Managerial Autonomy for Public Sector Banks

Regional Rural Banks

Regional Rural Banks Act, 1976; Regional Rural Banks (Amendment) Act, 1987; Kamath Working Group and Dantwala Committee; Efforts for Improving the Efficiency of RRBs

Differential Interest Rates (DIR) Credit Authorization Scheme

Banking Theory and Practice

Credit Planning

Recovery of Debts Due to Banks and Financial Institutions Act, 1993; Banking Regulation

The New Private Sector Banks

Local Area Banks

The Securitization and Reconstruction of Financial

Assets and Enforcement of Security Interest Ordinance, 2002

Measures Aimed at NPA Management

Banking Ombudsman Scheme, 2006

The Banking Ombudsman Scheme, 2006; Banking Companies (Acquisition and Transfer of Undertakings) and Financial Institutions Laws (Amendment) Act, 2006; Banking Codes and Standards Board of India; The Banking Regulation (Amendment) Ordinance, 2007; Mobile Banking Transactions in India: Operative Guidelines for Banks

#### 8. BANKING LEGISLATIONS AND REFORMS II

288-353

The Banking Commission

Recommendations of the Banking Commission; Action Taken on the Recommendations of the Banking Commission

Report of the Study Group to Frame Guidelines for Follow-up of Bank Credit

Norms for Inventory and Receivables; Working Capital Gap and Bank Finance; Proposed Style of Credit; Guidelines for Follow-up, Supervision and Control of End-use of Bank Credit; Other Recommendations; Action Taken on the Recommendations

Committee on Penal Rates and Service Charges

Committee on Transfer of Loan Accounts

Follow-up Action

Working Group on Planned Participation of Commercial Banks in Rural Electrification Schemes

Follow-up Action

Working Group on Housing Finance

Follow-up Action

Interim Report of the Working Group on Customer Service in Banks Recommendations; Follow-up Action

Janakiraman Committee on Securities, Operations of Banks and Financial Institutions

Goiporia Committee on Customer Service

Working Group on Inspection of Banks

Working Group on Inter-branch Reconciliation

Committee on Frauds and Malpractices in Banks

Committee on Industrial Sickness and Corporate Restructuring Shetty Committee on Lending under Consortium Arrangement Narasimham Committee Report (I) (1991) on the Financial System Follow-up Action

Narasimham Committee (II) (1998) Recommendations Follow-up Action

Committee on Credit Delivery System to SSIs

Working Group on Restructuring of Weak Public Sector Banks

Follow-up Action

Working Group on Management of Overseas Operations of Indian Banks Follow-up Action

Working Group to Explore the Possibilities of Setting-up of a Credit Information Bureau in India

Follow-up Action

Advisory Group on Banking Supervision

Corporate Governance; Management Information System (MIS);

Risk Management; Loan Accounting; Transparency and Disclosure; Internal Control; Supervision of Conglomerates; Cross-border Banking Supervision Working Group on Improvements in Monitoring of Clearing Systems

Follow-up Action

#### 9. MICRO-FINANCE

354-370

Micro-finance

Meaning and Significance; Self-help-group—Bank Linkage Programme (SBLP) Model and Micro-finance Institutions (MFI) Model

Micro-finance in the Indian Context

Policy Initiatives in India; Regulation of Micro-finance Institutions

Micro-insurance

Consultative Group Recommendations

Progress of Micro-finance in India

Impact of Micro-finance in India

## 10. CHANGING DIMENSIONS OF REGULATORY AND SUPERVISORY FRAMEWORK

371-490

Capital Adequacy Requirements

Risk Weighted Assets and Off-balance-sheet Items

Domestic Operations; Overseas Operations; Procedure

The New Basel Capital Accord

Income Recognition, Asset Classification and Provisioning; Definitions

Income Recognition

Income Recognition Policy; Reversal of Income; Leased Assets; Appropriation of Recovery in NPAs; Interest Application; Reporting of NPAs

Asset Classification

Categories of NPAs; Guidelines for Classification of Assets; Provisioning Norms; Transparency and Disclosure in Final Accounts; Regulation of Investments; Investment Fluctuation Reserve; Corporate Debt Restructuring Mechanism; Management of Non-performing Assets—Asset Reconstruction Company; The Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest Ordinance, 2002; Credit Information Bureau (India) Ltd; Improvements in Systems and Methods; Study of Large Value Bank Frauds; Money Laundering and Financing of Terrorism; Asset Liability Management System in Banks; Risk Management System in Banks; Corporate Governance in Bank Management; KYC Guidelines and Anti-money-laundering Standards; Prudential Regulation—Recent Initiatives; Capital Adequacy; Exposure Norms and Risk Weights; Para-banking Activities; Risk Management; Income Recognition, Asset Classification and Provisioning; NPA Management by Banks

Supervisory Framework

Board for Financial Supervision; Supervisory Process; On-site Inspection; Off-site Monitoring and Surveillance System (OSMOS); Supervisory Rating; Preventive Supervision—Prompt Corrective Action; Risk-based Supervision (RBS); Consolidated Supervision of Banks and their Subsidiaries; Regulatory and Supervisory Framework Relating to Select All-India Financial Institutions; Prudential Norms Relating to Income Recognition, Asset Classification, Provisioning and Capital Adequacy; Norms for Treatment of Restructured Accounts; On-site Inspection; Off-site Monitoring/Information System

APPENDIX: The New Basel Capital Accord; The Role of Transparency in the Functioning and Stability of Banks; Investment Fluctuation Reserve; Asset-liability Management; Risk Management System in Banks; Assessment, Management and Curtailment of Risks in the Indian Financial System; Corporate Governance in the Banking Sector; The Basel Core Principles for Effective Banking Supervision; Risk-based Supervision; Guidelines for Entry of Banks and Non-banking Financial Companies into Insurance Business; Guidelines for Entry of All-India Financial Institutions into Insurance Business

#### 11. FACTORING SERVICES

Definition and Classification of Factoring

Full Factoring; Resource Factoring; Maturity Factoring; Advance Factoring; Undisclosed Factoring: Invoice Discounting

Measures Taken by the Reserve Bank of India

Kalyanasundaram Committee on Factoring Services; Recommendations of the Kalyanasundaram Committee; Follow-up Action

Banking Services vis-à-vis Factoring Services

Essential Differences; Limitations of Factoring

#### 12. MERCHANT BANKING

500-513

491-499

Merchant Banking

Merchant Banking in the Indian Context; Securities and Exchange Board of India (Merchant Bankers) Regulations, 1992: Regulatory Mechanism; Conclusion

#### 13. CHANGING PROFILE OF INDIAN BANKING

514-535

From Security Orientation to Purpose Orientation; Correction of Regional Imbalances: Developments in the Field of Branch Banking; Development of Banking Habit; Attitudinal Change on the Part of Bankers; Emergence of Retail Banking; Breakthrough in Virtual Banking; Move Towards Universal Banking: 'Financial Services Supermarkets'; From Moneylending to Development Banking; Establishment of Specialized Branches; Customer Focus; Conclusion

The Challenges Ahead

Need to Revamp the Organizational Structure; Need to Develop Excellence in Management; Need to Improve Corporate Governance Standards; Need to Update the Level of Employee Competencies: Issues of Human Resources Management Strategies; Need to Adopt Appropriate Technology; Need to Bring Down the Level of Nonperforming Assets; Need to Improve Quality of Loan Portfolio: Directed Credit Programmes; Need to Restrict High Growth of Credit to few Sensitive Sectors; Need to Improve Credit flow to Rural Areas; Need for Banks to Conform to the Priority Sector Lending Target; Need to Persevere with the Task of Further Strengthening Financial Inclusion; Need to Improve Credit Administration and Management: Strengthening Risk Management Strategies; Need to Formulate a Realistic Approach in Relation to Sick Industrial Units; Need to Reverse the Trend in Declining Profitability: Proper Profit Planning; Need to Improve Customer Service; Need for a Review of Foreign Banks' Operations; Need to Raise the Banking System to a Global Level; Conclusion

#### 14. THE FOREIGN BANKS

536-541

Financing of Foreign Trade; Complaints against Foreign Banks; Foreign Banks and the **Priority Sector** 

#### 15. THE INDIGENOUS BANKERS AND THE MONEYLENDERS

542-548

Indigenous Bankers

Defects in the Working of Indigenous Bankers; Dwindling importance of Indigenous **Bankers** 

The Moneylenders

Classification and Operations of Moneylenders; Defects in the Working of Moneylenders; Decline of Moneylenders

#### 16. NON-BANKING FINANCIAL INSTITUTIONS

549-569

Non-banking Financial Companies

Components of the Non-banking Sector

Regulatory and Supervisory Framework Regulatory Backdrop; Recent Initiatives; Residuary Non-banking Companies; Mutual

Benefit Financial Companies (Nidhis); Chit Fund Companies; Non Banking Financial

Entities Regulated by the RBI Supervisory Framework

17.

#### 570-608

#### 17. COOPERATIVE BANKING

Structure of Cooperative Banking Sector

Urban Cooperative Banks (UCBs)

A Profile of UCBs; Conclusion; Draft Vision Document for Urban Cooperative Banks; Conclusion; Appendix to Urban Cooperative Banks; Urban Cooperative Banks' Policy Developments; High Power Committee on Urban Cooperative Banks; Licensing Norms; Recent Regulatory Measures; Follow-up Action; Structural Initiatives

Rural Cooperatives

Rural Cooperative Banks—Long Term Structure; Primary Agricultural Credit Societies; Central Cooperative Banks; State Cooperative Banks; State Cooperative Agriculture and Rural Development Banks; Primary Cooperative Agriculture and Rural Development Banks

Revitalization of Rural Cooperative Banks

Major Recommendations of the Task Force; Supervisory Framework for St CBs and CCBs; Major Recommendations of the Expert Committee to Review the Supervisory Role of NABARD; Supervisory Framework for UCBs

The Agricultural Refinance and Development Corporation

National Bank for Agriculture and Rural Development (NABARD) Functions; Resources of NABARD; Cooperative Development Fund; Rural Infrastructure Development Fund (RIDF); Credit Extended by NABARD; Kisan Credit Card Scheme; Gramin Tatkal Scheme; Role of NABARD in Rural Credit; Revival of Short-term Structure

#### 18. THE STATE BANK OF INDIA

609-626

The State Bank of India

Nationalization of the Imperial Bank; Organization and Management; Objectives; Information Technology; Internal Controls; Vigilance; Risk Management; Nonperforming Assets (NPAs) Management

State Bank of India and the Priority Sector

Small-scale Industries; Export Credit; Agricultural Banking;

Micro-credit: Self-help Groups

State Bank Group

Banking Subsidiary; Non-banking Subsidiaries/Joint Ventures; The State Bank of India (Subsidiary Banks Laws) Amendment Act, 2007; The State Bank of India (Amendment) Bill, 2010

#### 19. THE RESERVE BANK OF INDIA

627-672

Objectives; Organization; Nationalization of the RBI

Functions of the RBI

Monopoly of Note Issue

Currency Management

Monetary Policy Implementation of Monetary Policy—An Introduction

Instruments of Monetary Policy

Bank Rate; Open Market Operations; Variable Reserve Ratio Method; Liquidity Management by the Reserve Bank of India—A Summing-up; Qualitative Credit Controls; Implementation of Selective Credit Controls; Moral Suasion and Credit Rationing; Report of the Committee to Review the Working of the Monetary System

Bankers' Bank and Lender of the Last Resort

Banker to the Government

Exchange Control Developmental Role

Measures to Develop a Bill Market in India;

Discount and Finance House of India Limited

Payments and Settlement System

Development of Payments and Settlement System in India

#### 20. THE MONEY MARKET

673-685

Definition and Significance

Items Dealt within a Money Market; Composition of the Money Market; Importance of the Money Market; Features of a Developed Money Market

The Indian Money Market

Dichotomy of the Indian Money Market; Lack of Cooperation and Coordination between the Various Sectors of the Money Market; Lack of Control by the Central Bank over the Unorganized Sector of the Money Market; Multiplicity in Interest Rates; Seasonal Stringency of Funds; Absence of a Well-developed Bill Market; Absence of Specialized Financial Institutions; Inadequate Banking Facilities; Capital Shortage; Lack of all-India Money Market

#### 21. FINANCIAL STABILITY

686-709

Definition and Significance Financial Stability in the Indian Context Development of Markets Payment and Settlement Systems MPI Review

#### PART IV: FOREIGN BANKING SYSTEMS

#### 22. THE ENGLISH BANKING SYSTEM

713-748

Commercial Banks

History of Banking in the United Kingdom; Highlights of the English Commercial Banking System; Assets and Liabilities of London Clearing Banks; The Lifeboat Operation and the Banking Act, 1979

Regulation and Supervision

Financial Services Authority: Financial Services and Markets Act, 2000; Financial Stability Committee; The Banking Act, 2009

The Discount Houses

The Accepting Houses

The Issuing Houses

The Merchant Banks

Local Authority Financing

The National Girobank

Trustee Savings Banks

Overseas Banks

Foreign Banks

The Parallel Money Markets

Central Banking

The Bank of England; Bank of England and Note Issue; Peel's Act, 1844; Nationalization of the Bank; Bank of England Act, 1998; Audit Committee

Functions and Role of the Bank of England

Maintaining Stable and Efficient Monetary and Financial Framework; Monetary Policy Framework; Open Market Operations; Special Liquidity Scheme; Discount Window Facility (DWF); Selective Controls of Credit; Competition and Credit Control: A New Approach to Monetary Policy; As Agent, Advisor and Banker to the Government

#### 23. THE AMERICAN BANKING SYSTEM

749-783

Commercial Banking

The Federal Deposit Insurance Corporation

Regulatory and Supervisory Framework

**Supervisory Process** 

Highlights of the American Commercial Banking System

A Large Number of Small Banks; Member Banks; Branch Banking vis-à-vis Unit Banking in the US; Asset Portfolio of American Commercial Banks; Loans to New York Money Market 24. P

Th

C

Ba

C

O Is

Se

F

N

R

R

Ŀ

H H

]

**25**. 7

. .

26.

Non-banking Financial Intermediaries

Thrift Institutions; Finance Companies

Central Banking in the US

Background; Federal Reserve Banks; Board of Governors; The Federal Open Market

Committee

Operations of the Federal Reserve System

Issue of Federal Reserve Notes; Monetary Policy; Consumer and Community Affairs; Federal Reserve System in the US Payments System; Currency and Coin; Fiscal Agency Services

#### PART V: FOREIGN EXCHANGE

#### 24. PRINCIPLES OF FOREIGN EXCHANGE

787-815

Foreign Exchange

Meaning and Significance; Balance of Trade and Balance of Payments

Rate of Exchange

Rate of Exchange under the Gold Standard System; Rate of Exchange under the Inconvertible Paper Currency System; Balance of Payments Theory; Factors Causing Fluctuations in the Exchange Rates; Problem of Stabilization of Exchanges: Fluctuating Rates (Free Exchanges) vis-à-vis Stable Rates (Fixed Exchanges)

Exchange Control

Aims of Exchange Control; Devaluation of the Rupee

Methods of Exchange Control

Intervention; Restrictions

Spot and Forward Exchange

Arbitrage Operations

Euro Currency and Euro Currency Market

'Euro' Currency Unit and the European Central Bank

The Maastricht Criteria; The European Central Bank and the European System of Central Banks

# 25. THE INTERNATIONAL MONETARY FUND AND THE INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

816-853

Organization of the IMF; Objectives of the IMF; Main Areas of Activity; IMF Quotas

IMF Financial Facilities

IMF Conditionality

Conditionality Further Elaborated; Evolution of Conditionality

International Liquidity Special Drawing Rights

SDR Valuation Basket; SDR Allocation; Conclusion

India and the IMF

Financial Facilities to India

The International Bank for Reconstruction and Development (IBRD)

Features of IBRD; Conditions on which the Bank Guarantees or Makes Loans

The World Bank Group

The International Finance Corporation; The Multilateral Investment Guarantee Agency;

The International Centre for Settlement of Investment Disputes

APPENDIX: Guidelines on Conditionality

#### PART VI: PRACTICAL BANKING

#### 26. BANKER AND CUSTOMER

857-871

The Banker

The Customer

## Relationship between Banker and Customer-General Features of the Relationship

A Debt by a Banker vis-à-vis an Ordinary Commercial Debt

#### Special Features of the Relationship

Appropriation of Payments; Banker's Right of Set-off; Banker's Obligation to Honour the Customer's Cheques; Banker's Duty to Maintain Secrecy of the Customer's Account; Banker's Lien; Banker's Right to Charge Interest and Commission; Garnishee Orders; Banker-Customer Relationship in the Context of Bankers'; Book Evidence Act

#### 27. ACCOUNTS OF CUSTOMERS

872-884

32

33

3

C

#### Precautions to be Taken While Opening a Bank Account

#### Special Types of Customers

Lunatics; Drunkards; Undischarged Bankrupts; Minors; Married Women; Agents; Executors and Administrators; Partnership; Joint Stock Companies; Local Authorities; Trust Accounts; Unincorporated Bodies; Joint Accounts; Joint Hindu Families Fixed Deposits

#### 28. CHEQUES

885-895

#### Requisites of a Cheque

Differences between a Cheque and a Bill of Exchange

#### Dating of Cheques

#### Crossing of Cheques

General Crossing; Special Crossing; Persons Authorized to Cross a Cheque; Person Authorized to Open Crossed Cheques

#### **Endorsements**

Significance of Endorsements; Kinds of Endorsements

#### Marking of Cheques

#### Holder and Holder in Due Course

Holder of a Negotiable Instrument; Holder in Due Course of a Negotiable Instrument Liability of the Drawer for Dishonour of Cheques

#### 29. PROMISSORY NOTES

896-903

#### Illustrations; Specimen Forms

Legal Decisions

#### 30. THE PAYING BANKER

904-917

Conditions for Honouring Customer's Cheques, Circumstances under which a Banker is Justified in Refusing Payment of a Cheque Drawn on Him

#### Protection Given to a Paying Banker

Crossed Cheques; Uncrossed Cheques; Demand Drafts

#### Payment in due Course

#### Money Paid by Mistake

Payment of a Stopped Cheque in Error

Payment of Domiciled Bills

#### 31. THE COLLECTING BANKER

918-932

#### Liability for Conversion

#### Statutory Protection

The Collecting Banker should Act in Good Faith and Without Negligence; Protection only for Crossed Cheques; Cheques Should be Collected for a Customer; Banker as a Holder for Value

#### Collection of Bills

Collecting Banker and Presentment for Acceptance; Rules Regarding Presentment for Acceptance; To Whom the Bills should be Presented for Acceptance; Collecting Banker and Presentment for Payment

#### Duties of the Collecting Banker to the Customer Illustrations

#### 32. CUSTOMER'S PASS BOOK

933-937

Entries in the Pass Book—Effect of Errors Favourable to the Banker and those Favourable to the Customer

Closing an Account

#### 33. LOANS AND ADVANCES I

938-964

Principles of Bank Lending

Liquidity; Profitability; Safety and Security; Purpose; Social Responsibility; Industrial and Geographical Diversification; Recommendations of the Talwar Committee

Methods of Granting Advances

Cash Credit; Overdrafts; Bills Discounting and Purchasing; Issue of Letters of Credit; Loans

Secured Advances

Forms of Securities; Banker's Lien; Pledge; Mortgage-Hypothecation Mortgage of Movables

#### 34. LOANS AND ADVANCES II

965-1016

Secured Advances—Types of Securities: Land and Building Stock Exchange Securities

Valuation of Stock Exchange Securities; Margin for Stock Exchange Securities; Liquidity of Stock Exchange Securities; Charging Stock Exchange Securities—Necessity of Written Agreements (Memorandum of Deposit); Negotiable Securities; Non-negotiable Securities

Produce and Goods

Retention of Title Clauses

Documents of Title to Goods

Disadvantages; Precautions; Bill of Lading; Dock and Warehouse Warrants; Warehouse-keeper's Certificates; Delivery Order; Way Bill or Lorry Receipts

Life Insurance Policies

Security Against Term Loans

Unsecured Advances

Guarantees

Contract of Guarantee and Contract of Indemnity; Kinds of Guarantees; Guarantees as Banker's Security; Termination of Guarantee; Legal Decisions

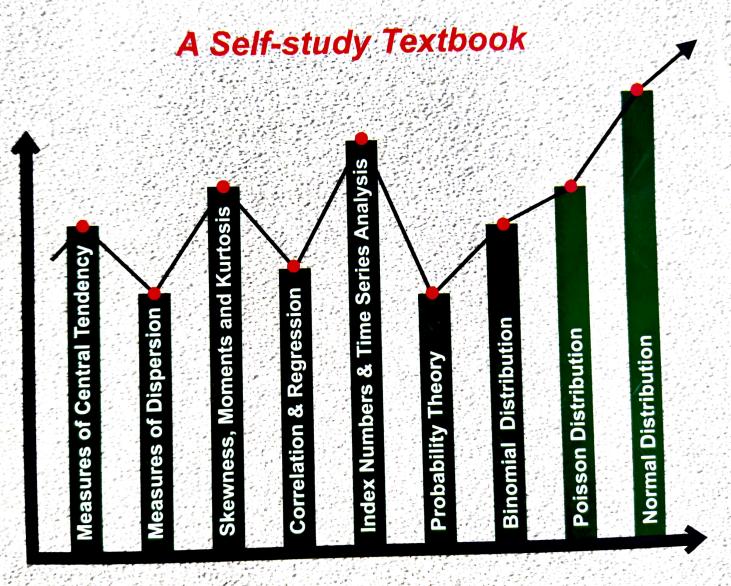
APPENDIX: Loans and Advances—Statutory and other Restrictions; Annexes

SUBJECT INDEX 1017

CASE INDEX 1038

#### Tulsian's

## BUSINESS STATISTICS



S. CHAND

CA (Dr.) P.C. TULSIAN CA BHARAT TULSIAN TUSHAR TULSIAN

## Contents

| No. | Chapter Name                                    | Page No. |
|-----|---|----------|
| 1.  | Statistics—An Introduction                      | 115      |
| 2.  | Classification and Tabulation                   | 16-31    |
| 3.  | Diagrammatic and Graphical Presentation         | 32-74    |
| 4.  | Measures of Central Tendency                    | 75–174   |
| 5.  | Measures of Dispersion                          | 175–246  |
| 6.  | Skewness, Moments and Kurtosis                  | 247-310  |
| 7.  | Correlation                                     | 311–387  |
| 8.  | Regression Analysis                             | 388–441  |
| 9.  | Analysis of Time Series                         | 442-539  |
| 10. | Index Numbers                                   | 540-615  |
| 11. | Probability Theory                              | 616–733  |
| 12. | Theoretical Distributions-Binomial Distribution | 734–771  |
| 13. | Theoretical Distributions—Poisson Distribution  | 772–787  |
| 14. | Theoretical Distributions—Normal Distribution   | 788–820  |

| APPENDICES                                       |         |
|--|---------|
| Appendix I: Important Points to Remember         | 823-827 |
| Appendix II: Analytical Questions with Reasoning | 828-829 |
| Appendix III: Analytical Questions with Comments | 830-832 |
| Appendix IV: Tulsian's Assignments for Practice  | 833-842 |
| Appendix V: Statistical Tables                   | 843-854 |

**22** ND EDITION



## INSURANCE PRINCIPLES AND PRACTICE

M N MISHRA S B MISHRA

S. CHAND

Liability People Capital Contract Officer Care Library People Care Library Officer Care Library People Care Library Officer Care Library Officer Casualty People Care Library Officer Casualty Library Compensation Compensation

## CONTENTS

## PART ONE INTRODUCTION

| Chapter  | Pages     |
|--|-----------|
| 1. Definition and Nature of Insurance          | 3 - 7     |
| 2. Evolution of Insurance                      | 8 - 15    |
| 3. Role and Importance of Insurance            | 16 - 20   |
| 4. Insurance Contract                          | 21 - 30   |
|  |           |
| PART TWO                                       |           |
| LIFE INSURANCE                                 |           |
| 5. Nature of Life Insurance Contract           | 33 – 42   |
| 6. Classification of Policies                  | 43 – 93   |
| 7. Annuities                                   | 94 – 96   |
| 8. Selection of Risk                           | 97 – 112  |
| 9. Measurement of Risk and Mortality Table     | 113–125   |
| 0. Calculation of Premium                      | 126 – 139 |
| 1. Treatment of Sub-Standard Risks             | 140 - 143 |
| 2. The Reserve                                 | 144 – 151 |
| 3. Investment of Funds                         | 152 - 167 |
| 14. Surrender Value                            | 168 - 171 |
| 15. Valuation and Surplus                      | 172 - 177 |
| 16. Policy Condition                           | 178 - 189 |
| 17. Life Insurance for the Under Privileged    | 190 - 203 |
| (i) Industrial Life Insurance                  |           |
| (ii) Group Life Insurance                      |           |
| (iii) Disability Benefit Policies              |           |
| (iv) Social Security Schemes and Pension Plans |           |
| (v) Micro Life Insurance                       |           |
| 18. Progress of Life Business of LIC           | 204 - 276 |
| Appendix                                       | •         |

## PART THREE MARINE INSURANCE

| 19          | . Nature of Marine Insurance Contract                                |           |
|-------------|--|-----------|
|             | . Marine Insurance Policies  | 277 - 298 |
| 21.         | Policy Conditions  | 299 - 303 |
| 22.         | Premium Calculation  | 304 - 310 |
| 23.         | Marine Losses  | 311 - 314 |
| 24.         | Payment of Claims  | 315 - 326 |
|             | Progress of Marine Insurance Business in India                       | 327 - 333 |
|             | Appendix   | 334 – 342 |
|             |  | 343 – 397 |
|             | PART FOUR  |           |
|             | FIRE - INSURANCE   |           |
| 26.         | Nature and Use of Fire Insurance                                     | 401 – 403 |
| 27.         | Fire Insurance Contract  | 404 – 409 |
| 28.         | Kinds of Policies  | 410 – 414 |
| 29.         | Policy Conditions  | 415 – 424 |
| 30.         | Rate Fixation in Fire Insurance                                      | 425 – 429 |
| 31.         | Payment of Claim   | 430 – 435 |
| 32.         | Progress of Fire Insurance   | 436 – 453 |
|             | PART FIVE  |           |
|             | MISCELLANEOUS INSURANCE  |           |
| 22          | Transport Insurance and Motor Insurance,                             | 457 – 472 |
| <i>JJ</i> . |  | 475 – 479 |
|             | Appendix Miscellaneous Forms of Insurance Including Social Insurance | 480 – 555 |
| 34.         | Miscellaneous Points of Insurance in India                           | 556 - 577 |
| 35.         | Rural Insurance and Prospects of Agriculture Insurance in India      | 578 - 591 |
| 36.         | Urban Traditional and Non-Traditional Insurance                      | 592 - 601 |
| 37.         | Progress of Miscellaneous General Insurance                          | 602 - 634 |
| 38.         | Progress of Total General Insurance                                  |           |

#### PART SIX

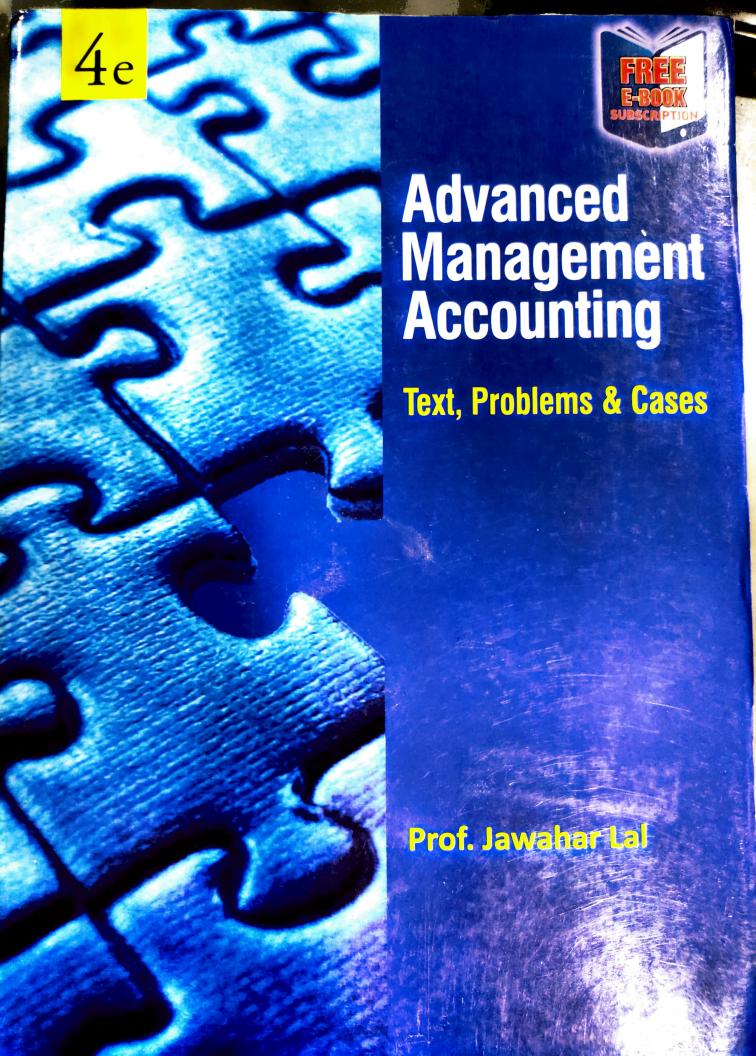
#### PROSPECTS OF INSURANCE COMPANIES

|           |  | 637 - 651 |
|-----------|--|-----------|
| 39.       | Prospects of Insurance                                     |           |
|           | Privatisation of Insurance Industry                        | 652 - 702 |
| 40.<br>41 | Insurance Innovation and Long Term Care Insurance          | 703 - 730 |
|           | Risk Management and Commercial Insurance                   | 731 – 739 |
|           | Health Insurance   | 740 – 778 |
|           | Catastrophe Insurance                                      | 779 – 790 |
|           | Liability Insurance  | 791 – 803 |
|           | Micro Insurance and Credit Insurance                       | 804 - 820 |
| 1         | Reinsurance  | 821 - 829 |
|           | Corporate Governance and Corporate Social Responsibilities | 830 - 870 |
|           | Bancassurance  | 871 - 879 |
|           | International Insurance Scene                              | 880 – 900 |
| 7         | Appendix   |           |
|           | PART SEVEN   |           |

#### **INSURANCE LEGISLATION**

| 51. Insurance Legislation in India |  | 903 - 100 |
|------------------------------------|--|-----------|
| (i) Insurance Act, 1938            |  |           |
| (ii) Life Insurance Act, 1956      |  |           |
| (iii) Marine Insurance Act, 1963   |  |           |

- (iv) General Insurance Act, 1972
- (v) Insurance Regulatory and Development Authority Act, 1999



#### DETAILED CONTENTS

#### PART ONE: INTRODUCTION

| 1.3 Chapter 1: | MANAGEMENT ACCOUNTING: NATURE AND SCOPE  | 1.3-1.34   |
|----------------|--|--|
| 2.6            | Learning Objectives  | 1.3  |
|                | Definitions of Management Accounting   | 1,4  |
|                | Scope of Management Accounting   | 1.4  |
|                | Cost Accounting and Management Accounting  | 1.5  |
| 3.3(           | Management Functions and Management Accounting   | 1.6  |
| 4.8            | Users of Management Accounting Information   | 1.9  |
| -10            | Financial Accounting   | 1.10   |
|                | Limitations of Financial Accounting  | 1.11   |
|                | Differences between Management Accounting and Financial Accounting   | 1.11   |
| .13            | Similarities between Management Accounting and Financial Accounting  | 1.15   |
| .15            | Management Accountant — Status and Functions   | 1.16   |
| -8.4           | Management Accountant, Controller & Treasurer  | 1.18   |
| 0.4            | Management Accounting in Service and Not-for-Profit Organizations  | 1.18   |
|                | Management Accounting in other Organizations: Banks and Merchandising fi   | rms 1.19   |
|                | International Aspects of Management Accounting   | 1.21   |
| 9.15           | Current Focus of Management Accounting   | 1.21   |
| 0.14           | Critical Analysis and Discussion Questions, Self-Assessment Questions,   |  |
| 1.11           | Multiple Choice Questions and Cases  | 1.25   |
| Chapter 2:     | COST CONCEPTS AND CLASSIFICATIONS  | 2.1-2.62   |
| 13.2           | Learning Objectives  | 2.1  |
| 14.2           | Cost   | 2.2  |
| 15.3           | Deferred Cost and Expired Cost   | 2.2  |
|                | Expenses   | 2.2  |
|                |  |  |
|                | Loss   | 2.3  |
| 16             |  | 2.3  |
| 16.            | Cost Incurrence and Cost Recognition   | 2.3  |
| 16.5<br>-17.5  | Cost Incurrence and Cost Recognition  Different Cost Concepts and Classifications  | 2.3<br>2.4   |
| ,              | Cost Incurrence and Cost Recognition Different Cost Concepts and Classifications Traditional Classification of Costs   | 2.3<br>2.4<br>2.6  |
| -17.5          | Cost Incurrence and Cost Recognition  Different Cost Concepts and Classifications  Traditional Classification of Costs  Cost Behaviour (in Relation to Changes in Output or Activity)  | 2.3<br>2.4<br>2.6<br>2.8   |
| 17.5           | Cost Incurrence and Cost Recognition  Different Cost Concepts and Classifications  Traditional Classification of Costs  Cost Behaviour (in Relation to Changes in Output or Activity)  Degree of Traceability to a Cost Object – Product or Job  | 2.3<br>2.4<br>2.6<br>2.8<br>2.15                                 |
| 17.5           | Cost Incurrence and Cost Recognition Different Cost Concepts and Classifications Traditional Classification of Costs Cost Behaviour (in Relation to Changes in Output or Activity) Degree of Traceability to a Cost Object – Product or Job Timing of Charges against Sales Revenue  | 2.3<br>2.4<br>2.6<br>2.8<br>2.15<br>2.16                         |
| 17.5           | Cost Incurrence and Cost Recognition Different Cost Concepts and Classifications Traditional Classification of Costs Cost Behaviour (in Relation to Changes in Output or Activity) Degree of Traceability to a Cost Object – Product or Job Timing of Charges against Sales Revenue Management Function  | 2.3<br>2.4<br>2.6<br>2.8<br>2.15<br>2.16<br>2.19                 |
| 17.5           | Cost Incurrence and Cost Recognition Different Cost Concepts and Classifications Traditional Classification of Costs Cost Behaviour (in Relation to Changes in Output or Activity) Degree of Traceability to a Cost Object – Product or Job Timing of Charges against Sales Revenue Management Function Relationship with Accounting Period: Capital Cost and Revenue Cost   | 2.3<br>2.4<br>2.6<br>2.8<br>2.15<br>2.16<br>2.19<br>2.19         |
| 17.5           | Cost Incurrence and Cost Recognition Different Cost Concepts and Classifications Traditional Classification of Costs Cost Behaviour (in Relation to Changes in Output or Activity) Degree of Traceability to a Cost Object – Product or Job Timing of Charges against Sales Revenue Management Function Relationship with Accounting Period: Capital Cost and Revenue Cost Costs for Decision-Making and Planning Cost for Control | 2.3<br>2.4<br>2.6<br>2.8<br>2.15<br>2.16<br>2.19<br>2.19         |
| 17.5           | Cost Incurrence and Cost Recognition Different Cost Concepts and Classifications Traditional Classification of Costs Cost Behaviour (in Relation to Changes in Output or Activity) Degree of Traceability to a Cost Object – Product or Job Timing of Charges against Sales Revenue Management Function Relationship with Accounting Period: Capital Cost and Revenue Cost Costs for Decision-Making and Planning                  | 2.3<br>2.4<br>2.6<br>2.8<br>2.15<br>2.16<br>2.19<br>2.19<br>2.25 |
| 17.5           | Cost Incurrence and Cost Recognition Different Cost Concepts and Classifications Traditional Classification of Costs Cost Behaviour (in Relation to Changes in Output or Activity) Degree of Traceability to a Cost Object – Product or Job Timing of Charges against Sales Revenue Management Function Relationship with Accounting Period: Capital Cost and Revenue Cost Costs for Decision-Making and Planning Cost for Control | 2.3<br>2.4<br>2.6<br>2.8<br>2.15<br>2.16<br>2.19<br>2.19         |

(rir)

|            | Critical Analysis and Discussion Questions, Self-Assessment Questions, Multiple Choice Questions and Cases | 2.42                  |
|------------|--|-----------------------|
|            | PART TWO: COST ACCUMULATION SYSTEMS AND PRODUCT COSTING  |                       |
| Chapter 3: | COST ALLOCATION AND OVERHEAD ABSORPTION  | 3.3-3.34              |
|            | Learning Objectives  | 3.3                   |
|            | Absorption of Overheads  | 3.4                   |
|            | Stages in Absorption of Overheads  | 3.4                   |
|            | Methods of Absorption  | 3.11                  |
|            | Overhead Rates: Actual vs. Predetermined   | 3.23                  |
|            | Administrative Overhead  | 3.26                  |
|            | Selling and Distribution Overheads   | 3.27                  |
|            | Backflush Costing  | 3.28                  |
|            | Critical Analysis and Discussion Questions, Self-Assessment Questions,                                     |                       |
|            | Multiple Choice Questions and Cases  | 3.29                  |
| Chapter 4: | ACTIVITY-BASED COSTING (ABC)   | 4.1-4.86              |
|            | Learning Objectives  | 4.1                   |
|            | Traditional Costing System   | 4.2                   |
|            | Activity-Based Costing (ABC): Meaning of   | 4.5                   |
|            | Stages and Flow of Costs in ABC (Steps in ABC)   | 4.5                   |
|            | Activity Cost Drivers  | 4.11                  |
|            | Selection of Activity Cost Drivers   | 4.12                  |
|            | Types of Cost Drivers  | 4.13                  |
|            | Classification of Activities in Manufacturing Organizations  | 4.14                  |
|            | Comparison between Traditional Costing and Activity-Based Costing Syste                                    | m 4.15                |
|            | Activity-Based Costing and External Reports  | 4.22                  |
|            | Critical Analysis and Discussion Questions, Self-Assessment Questions,                                     |                       |
|            | Multiple Choice Questions and Cases  | 4.23                  |
| Chapter 5: | ABSORPTION VERSUS VARIABLE COSTING   | 5.1-5.10 <sup>9</sup> |
| •          | Learning Objectives  | 5.1                   |
|            | Concept of Absorption Costing  | 5.2                   |
|            | Concept of Variable Costing  | 5.2                   |
|            | Differences between Absorption Costing and Variable Costing  | 5.3                   |
|            | Throughput Costing   | 5.9                   |
|            | Reconciliation of Net Income   | 5.12                  |
|            | Variable Costing and Contribution Margin   | 5.13                  |
|            | Tallacio Coming and  | 5.15                  |

5.18

5.19

5.20

Advantages of Variable Costing

Limitations of Variable Costing

Advantages of Absorption Costing

Limitations of Absorption Costing

Chapter 5:

|            | Precautions in Using Absorption Costing   | 5.22         |
|------------|---|--------------|
|            | Impact of JIT Inventory Method and Lean Production  | 5.23         |
|            | Cost Behaviour  | 5.24         |
|            | Critical Analysis and Discussion Questions, Self-Assessment Questions,                              |              |
|            | Multiple Choice Questions and Cases   | 5.72         |
|            | PART THREE: MANAGERIAL DECISION MAKING  |              |
| Chapter 6: | COST – VOLUME – PROFIT (CVP) ANALYSIS   | 6.3-6.134    |
|            | Learning Objectives   | 6.3          |
|            | Concept of CVP  | 6.4          |
|            | Techniques of CVP Analysis  | 6.4          |
|            | Contribution Margin Concept   | 6.4          |
|            | Break Even Analysis   | 6.6          |
|            | Profit Volume (P/V) Analysis  | 6.11         |
|            | Role of CVP Analysis  | 6.12         |
|            | CVP Analysis in Service and Non-profit Organizations  | 6.22         |
|            | Contribution Margin Analysis  | 6.22         |
|            | Operating Leverage  | 6.24<br>6.26 |
|            | CVP Analysis and Scarce Resource  | 6.26         |
|            | Indifference Point  | 6.28         |
|            | CVP Analysis and Economist's View   | 6.29         |
|            | Limitations of CVP Analysis  Critical Analysis and Discussion Questions, Self-Assessment Questions, | 0.29         |
|            | Multiple Choice Questions and Cases   | 6.102        |
|            | footier a division of a constant  |              |
| Chapter 7: | RELEVANT INFORMATION AND DECISION MAKING  | 7.1–7.158    |
|            | Learning Objectives   | 7.1          |
|            | Short-Run Decisions and Long-Run Decisions  | 7.2          |
|            | Decision-Making Process   | 7.2          |
|            | Relevant Information  | 7.4          |
|            | Relevant Information and Differential Analysis  | 7.4          |
|            | Activity-Based Costing and Relevant Costs   | 7.6          |
|            | Precautions in Decision Making  | 7.6          |
|            | Decision Making: Behavioural Issues   | 7.7          |
|            | Types of Differential Analysis Decisions  | 7.8          |
|            | Qualitative Factors in Decision Making  | 7.22         |
|            | Critical Analysis and Discussion Questions, Self-Assessment Questions,                              |              |
|            | Multiple Choice Questions and Cases   | 7.110        |
| Chapter 8: | PRICING DECISIONS   | 8.1-8.44     |
| 5          | Learning Objectives   | 8.1          |
|            | Factors Influencing Pricing Decisions   | 8.2          |
|            | Different Methods of Pricing  | 8.3          |
|            | Short-run vs. Long-run Pricing Decisions  | 8.7          |

| Competitive Pricing  | 8.8  |
|--|------|
| Target Pricing   | 8.9  |
| Life Cycle Product Costing and Pricing                                 | 8.10 |
| Pareto Analysis in Pricing Decisions                                   | 8.10 |
| Economic Approach to Pricing   | 8.10 |
| Price Indifference Point   | 8.11 |
| Critical Analysis and Discussion Questions, Self-Assessment Questions, |      |
| Multiple Choice Questions and Cases                                    | 8.35 |
|  |      |

### PART FOUR: PLANNING, CONTROL AND PERFORMANCE MEASUREMENT

| Chapter 9: | BUDGETING   | 9.3-9.156          |
|------------|---|--------------------|
| •          | Learning Objectives                               | 9.3                |
|            | Concept of Budgeting                              | 9.4                |
|            | Budgeting and Forecasting                         | 9.4                |
|            | Concept of Budgetary Control                      | 9.4                |
|            | Planning and Control Process and Budgeting        | 9.5                |
|            | Planning Budgets and Control Budgets              | 9.6                |
|            | Strategic Planning and Budgeting                  | 9.7<br><b>9</b> .8 |
|            | Objectives and Functions of Budgeting             | 9.8<br>9.10        |
|            | Advantages of Budgeting                           | 9.10               |
| •          | Disadvantages of Budgeting                        | 9.11               |
|            | Budgeting Procedure                               | 9.12               |
|            | Organization for Budgeting (The Budget Committee) | 9.13               |
|            | Rudget Period                                     | 9.14               |
|            | Elements of a Successful Budgeting Plan           | 9.15               |
|            | Budget Centres                                    | 9.16               |
|            | Limiting or Principal Budget Factor               | 9.16               |
|            | Behavioural Dimension of Budgeting                | 9.22               |
|            | Fixed and Flexible Budgeting                      | 9.24               |
|            | Types of Budgets                                  | 9.25               |
|            | Sales Budget                                      | 9.27               |
|            | Production Budget                                 | 9.27               |
|            | Production Cost Budget                            | 9.30               |
|            | Ending Inventories Budget                         | 9.31               |
|            | Salling Expense Budget                            | 9.32               |
|            | Administrative Expense Budget                     | 9.32               |
|            | Budgeted Income Statement                         | 9.33               |
|            | Canital Expenditure Budget                        | 9.33               |
|            | Research and Development Budget                   | 9.34               |
|            | a t Dudget  | 9.3                |
|            | Budgeted or Projected Balance Sheet               |                    |
|            | Budgeton of 1223                                  |                    |

(xxii)

|            | Statement of Cash Flows  | 9.36        |
|------------|--|-------------|
|            | Master Budget (or Comprehensive Budget)  | 9.36        |
|            | Revision of Budgets  | 9.37        |
|            | Budgeting in International Perspective   | 9.106       |
|            | Zero Base Budgeting (ZBB)  | 9.107       |
|            | Planning, Programming and Budgeting System (PPBS)                              | 9.109       |
|            | Activity-Based Budgeting (ABB)   | 9.110       |
|            | Life-Cycle Budget  | 9.112       |
|            | Kaizen Budgeting   | 9.112       |
|            | Government Budgeting   | 9.113       |
|            | Critical Analysis and Discussion Questions, Self-Assessment Questions          | 5,          |
|            | Multiple Choice Questions and Cases  | 9.115       |
| Chapter 10 | : STANDARD COSTING AND VARIANCE ANALYSIS                                       | 10.1-10.140 |
|            | Learning Objectives  | 10.1        |
|            | Control of Cost: An Introduction   | 10.2        |
|            | Historical Cost and its Limitations  | 10.2        |
|            | Standard Cost and Standard Costing: Definitions                                | 10.2        |
|            | Standard Costs and Estimated Costs   | 10.3        |
|            | Standard Costs and Budgets   | 10.3        |
|            | Similarities Between Standard Costing and Budgeting                            | 10.4        |
|            | Advantages of Standard Costing   | 10.4        |
|            | Different Types of Standards   | 10.6        |
|            | How Tight Should Standards Be  | 10.7        |
|            | Developing or Setting Standards  | 10.7        |
|            | Factory Overhead Cost Standards  | 10.9        |
|            | Revision of Standards  | 10.10       |
|            | Variance Analysis  | 10.10       |
|            | Material Variance  | 10.11       |
|            | Labour Variances   | 10.27       |
|            | Overhead Variances   | 10.38       |
|            | Sales Variances  | 10.65       |
|            | Revision Variance  | 10.94       |
|            | Disposition of Variance  | 10,94       |
| *          | Managerial Uses of Variances   | 10.95       |
| 1          | Variance Analysis and Performance Evaluation                                   | 10.98       |
|            | Problems with the use of Standard Costs in Today's                             |             |
|            |  | 10. 99      |
| be.        | Manufacturing Environment Standard Casting in Samina Industry Firms            | 10.100      |
|            | Standard Costing in Service Industry Firms Characteristics of Variance Penarts | 10.100      |
|            | Characteristics of Variance Reports  | 10.101      |
|            | Limitations of Standard Costing  |             |
|            | Critical Analysis and Discussion Questions, Self-Assessment Question           | 10.102      |
|            | Multiple Choice Questions and Cases  | 10.102      |

| - aupter      | 11: PERFORMANCE MEASUREMENT IN DIVISIONALISED COMPANIES   |   |
|---------------|---|---|
|               | Learning Objectives   | 11.1-11.110   |
|               | Decentralisation/Divisionalisation  | 11.1  |
|               | Functional Organisational Structure   | 11.2  |
|               | Types of Responsibility Centres   | 11.4  |
|               | Responsibility Accounting   | 11.5  |
|               | Responsibility Accounting and Controllability   | 11.8  |
|               | Responsibility Performance Reporting  | 11.9  |
|               | Responsibility Reporting for Cost Centres   | 11.10   |
|               | Responsibility Reporting for Profit Centres   | 11.11   |
|               | Measuring Divisional Performance  | 11.12   |
|               | Different Measures of Financial Performance   | 11.18   |
|               | Use of ROI  | 11.18<br>11.23  |
|               | Accounting Policies and ROI   | 11.23   |
|               | Which Assets (Investment) to use to Calculate ROI   | 11.24   |
|               | Advantages of ROI   | 11.25   |
|               | Disadvantages of ROI  | 11.26   |
|               | Non-Financial Measures of Performance   |   |
|               | Evaluating a Division vs Evaluating a Division's Manager  | 11.33   |
|               | Performance Measurement in Multinational Companies  | 11.36<br>11.38  |
|               | Critical Analysis and Discussion Questions, Self-Assessment Questions   | 11.56   |
|               | Multiple Choice Questions and Cases   | 11.79   |
| Chapter 12:   | TRANSFER PRICING  | 12.1-12.103   |
|               | Learning Objectives   | 12.1  |
|               | Concept of Transfer Pricing   | 12.2  |
|               | Objectives in Sound Transfer Pricing System   | 12.2  |
|               | Requisites of a Sound Transfer Pricing System   | 12.4  |
|               | Methods of Transfer Pricing   | 12.5  |
|               | Summary View  | 12.11   |
|               | Setting Transfer Prices in Different Situations   | 12.12   |
|               | Activity-Based Costs (ABC) and Transfer Pricing   | 12.17   |
|               | Activity-Based Costs (Fibe) and Transfer Friend   |   |
|               | Disadvantages of Transfer Pricing   | 12.17   |
|               | Disadvantages of Transfer Pricing   | 12.17<br>12.17  |
|               | Guidelines for an Optimum Transfer Pricing System   | 12.17   |
|               | Guidelines for an Optimum Transfer Pricing System  Transfers Between Divisions in Different Countries   | 12.17<br>12.18  |
|               | Guidelines for an Optimum Transfer Pricing System   | 12.17<br>12.18  |
|               | Guidelines for an Optimum Transfer Pricing System Transfers Between Divisions in Different Countries Critical Analysis and Discussion Questions, Self-Assessment Questions Multiple Choice Questions and Cases  | 12.17<br>12.18<br>s,  |
| Chapter 13: 1 | Guidelines for an Optimum Transfer Pricing System Transfers Between Divisions in Different Countries Critical Analysis and Discussion Questions, Self-Assessment Questions Multiple Choice Questions and Cases PERFORMANCE MEASUREMENT – BALANCED   | 12.17<br>12.18<br>s,<br>12.74<br>13.1–13.27                         |
| Chapter 13: 1 | Guidelines for an Optimum Transfer Pricing System Transfers Between Divisions in Different Countries Critical Analysis and Discussion Questions, Self-Assessment Questions Multiple Choice Questions and Cases PERFORMANCE MEASUREMENT – BALANCED SCORECARD   | 12.17<br>12.18<br><b>s,</b> 12.74<br>13.1–13.27                     |
| Chapter 13:   | Guidelines for an Optimum Transfer Pricing System Transfers Between Divisions in Different Countries Critical Analysis and Discussion Questions, Self-Assessment Questions Multiple Choice Questions and Cases PERFORMANCE MEASUREMENT – BALANCED SCORECARD Learning Objectives   | 12.17<br>12.18<br>s,<br>12.74<br>13.1–13.27<br>13.1<br>13.2         |
| Chapter 13:   | Guidelines for an Optimum Transfer Pricing System Transfers Between Divisions in Different Countries Critical Analysis and Discussion Questions, Self-Assessment Questions Multiple Choice Questions and Cases PERFORMANCE MEASUREMENT – BALANCED SCORECARD Learning Objectives Performance Measurement: Concept  | 12.17<br>12.18<br>s,<br>12.74<br>13.1–13.27<br>13.1<br>13.2<br>13.2 |
| Chapter 13:   | Guidelines for an Optimum Transfer Pricing System Transfers Between Divisions in Different Countries Critical Analysis and Discussion Questions, Self-Assessment Questions Multiple Choice Questions and Cases PERFORMANCE MEASUREMENT – BALANCED SCORECARD Learning Objectives Performance Measurement: Concept Traditional Performance Measurement Techniques | 12.17<br>12.18<br>s, 12.74<br>13.1–13.27<br>13.1<br>13.2            |
| Chapter 13:   | Guidelines for an Optimum Transfer Pricing System Transfers Between Divisions in Different Countries Critical Analysis and Discussion Questions, Self-Assessment Questions Multiple Choice Questions and Cases PERFORMANCE MEASUREMENT – BALANCED SCORECARD Learning Objectives Performance Measurement: Concept  | 12.17<br>12.18<br>s,<br>12.74<br>13.1–13.27<br>13.1<br>13.2<br>13.2 |

|             | - A Composed   | 13.7       |
|-------------|--|------------|
|             | Balanced Scorecard Meaning of Balance in Balanced Scorecard            | 13.7       |
|             | Perspectives (Factors) in Balanced Scorecard                           | 13.8       |
|             | Performance Drivers  | 13.14      |
|             | Weighting Performance Measures   | 13.15      |
|             | Characteristics of Good Balanced Scorecards                            | 13.17      |
|             | Requisites of Balanced Scorecards                                      | 13.17      |
|             | Critical Analysis and Discussion Questions, Self-Assessment Questions, |            |
|             | Multiple Choice Questions and Cases                                    | 13.20      |
| Chapter 14: | STRATEGIC MANAGEMENT ACCOUNTING  | 14.1–14.24 |
| Circle      | Learning Objectives  | 14.1       |
|             | Strategic Management Accounting-Concept and Definitions                | 14.2       |
|             | Techniques of Strategic Management Accounting                          | 14.3       |
|             | Target Costing   | 14.4       |
|             | Kaizen Costing   | 14.5       |
|             | Life-Cycle Costing   | 14.7       |
|             | Theory of Constraints (TOC)  | 14.8       |
|             | Benchmarking   | 14.10      |
|             | Activity-Based Management (ABM)  | 14.12      |
|             | Activity-based Costing and Activity-based Management                   | 14.12      |
|             | Just-In-Time (JIT) Method  | 14.15      |
|             | Critical Analysis and Discussion Questions, Self-Assessment Questions, |            |
|             | Multiple Choice Questions and Cases                                    | 14.21      |
| Chapter 15: | MANAGEMENT CONTROL SYSTEM (MCS)  | 15.1–15.33 |
|             | Learning Objectives  | 15.1       |
|             | Management Control System: Definition and Nature                       | 15.2       |
|             | Management Control System: Formal and Informal                         | 15.2       |
|             | Characteristics of Management Control Systems                          | 15.3       |
|             | Factors Influencing Management Control Systems                         | 15.3       |
|             | Steps in Management Control Systems                                    | 15.3       |
|             | Strategy Formulation   | 15.4       |
|             | Vision, Mission, Goals   | 15.6       |
|             | Simon's 4 P's Strategy   | 15.13      |
|             | Management Control   | 15.15      |
|             | Task or Operational Control  | 15.16      |
|             | Management Control Systems   | 15.18      |
|             | Management Control Structure   | 15.18      |
|             | Management Control Process   | 15.18      |
|             | Critical Analysis and Discussion Questions, Self-Assessment Questions, |            |
|             | Multiple Choice Questions and Cases                                    | 15.28      |

#### PART FIVE: MANAGERIAL USES OF FINANCIAL STATEMENTS

| Learning Objectives  Cash Flow Statement: Concept and Definitions  Classification of Cash Inflows and Outflows  Cash Flow Statement and Cash Receipts and Disbursements  Cash Flow and Income Statements | 16.3<br>16.4<br>16.5<br>16.8<br>16.8<br>16.8 |
|--|--|
| Classification of Cash Inflows and Outflows Cash Flow Statement and Cash Receipts and Disbursements Cash Flow and Income Statements  | 16.5<br>16.8<br>16.8<br>16.8                 |
| Cash Flow Statement and Cash Receipts and Disbursements Cash Flow and Income Statements  | 16.8<br>16.8<br>16.8                         |
| Cash Flow and Income Statements  | 16.8<br>16.8                                 |
|  | 16.8   |
| Cook Books (Cook New York)   |  |
| Cash Profit (Cash Net Income)  | 16.8   |
| Presentation of Cash Flow Statement  |  |
| Preparing Cash Flow Statement  | 16.12  |
| Provisions of AS-3 on Treatment of Certain Items   | 16.14  |
| Significance of Cash Flow Statement  | 16.38  |
| Critical Analysis and Discussion Questions, Self-Assessment Questions,   |  |
| Multiple Choice Questions and Cases  | 16.40  |
| Chapter 17: FINANCIAL STATEMENT ANALYSIS   | 17.1–17.58                                   |
| Learning Objectives  | 17.1   |
| Financial Statement Analysis: Meaning and Objectives   | 17.2   |
| Techniques of Financial Statement Analysis   | 17.3   |
| Common Size Statements   | 17.7   |
| Focus of Financial Statement Analysis-Ratio Analysis   | 17.8   |
| Liquidity or Short-term Solvency Analysis (or Ratios)  | 17.8   |
| Analysis for Measuring the Movement of Assets-Activity Ratios  | 17.11  |
| Profitability Analysis (Or Ratios)   | 17.14  |
| Capital Structure or Gearing Analysis (RATIOS)   | 17.17  |
| Market Strength Analysis or Investor Analysis  | 17.19  |
| Growth and Stability Analysis or Ratios  | 17.23  |
| Limitations of Financial Ratios  | 17.24  |
| Critical Analysis and Discussion Questions, Self-Assessment Questions,   |  |
|  | 17.46  |
| Multiple Choice Questions and Cases  | 1-4  |
| SELECTED BIBLIOGRAPHY  |  |
| INDEX  | 5–8  |





# COST AND MANAGEMENT ACCOUNTING

ELEVENTH EDITION



M N Arora

#### **CONTENTS**

Preface to the Eleventh Edition v
Preface to the First Edition vi
Foreword vii

#### SECTION I: COST ACCOUNTING

#### 1. OVERVIEW OF COST ACCOUNTING

1.3-1.44

Learning Objectives; Accounting as an Information System; Meaning of Costing and Cost Accounting; Objectives and Functions of Cost Accounting; Cost Accounting and Financial Accounting—A Comparison; Meaning of Cost; Cost Centre; Cost Unit; Methods of Costing; Techniques of Costing; Cost Ascertainment and Cost Estimation; Classifications of Cost; Special Costs for Management Decision Making; Elements of Cost; Installation of A Costing System; Advantages of Cost Accounting; Limitations or Objections Against Cost Accounting; Essentials of A Good Cost Accounting System; Cost Accounting Standards (CAS); Problems and Solutions; Summary and Key Terms; Examination Questions; Answers

#### 2. MATERIAL COST

2.1 - 2.83

Learning Objectives; Meaning of Material; Material Control (Inventory Control); Techniques of Inventory Control; ABC Technique (Selective Control); Stock Levels; Inventory Turnover; Slow, Non-Moving and Obsolete Materials; Purchase of Materials; Purchase Procedure; Purchase Price; Storekeeping; Classification and Codification of Materials; Stores Records; Documents Authorizing Movements of Materials; Inventory Systems; Material Handling; Methods of Pricing Material Issues; Average Cost Methods; Material Losses; Waste, Scrap, Spoilage and Defectives; Problems and Solutions; Summary and Key Terms; Examination Questions; Answers

#### 3. EMPLOYEE COST (Labour Cost)

3.1-3.68

Learning Objectives; Meaning; Personnel Department; Labour Turnover; Engineering Department; Work Study; Job Analysis; Time-Keeping Department; Payroll Department; Idle Time; Overtime; Treatment of Special Items; Cost Accounting Department; Labour Remuneration; Methods of Remuneration (Systems of Wage Payment); Incentive Plans; Group Bonus Plans; Incentive Plans for Indirect Workers; Co-partnership and Profit Sharing; Non-monetary Incentives; Problems and Solutions; Summary and Key Terms; Examination Questions; Answers

#### 4. OVERHEAD COST

X

4.1-4.100

Learning Objectives; Meaning of Overhead Cost; Classifications of Overhead Costs; Segregation of Semi-Variable Costs; Standing Order Numbers (Codification of Overheads); Overheads Distribution; Collection of Overheads; Allocation and Apportionment of Overheads (Primary Distribution); Re-Apportionment of Service Department Costs (Secondary Distribution); Absorption of Overheads; Types of Overhead Rates; Capacity Utilization and Overheads; Administration Overheads (Office or General Overheads); Selling and Distribution Overheads; Under-Absorption and Overheads; Treatment of Special Items of Overheads; Problems and Solutions; Summary and Key Terms; Examination Questions; Answers

#### 5. ACTIVITY BASED COSTING

5.1-5.17

Learning Objectives; Introduction; Costing Procedure; Traditional Method, Activity Based Costing Approach; Terms Used in ABC; Steps in Activity Based Costing; Limitations of Activity Based Costing; Problems and Solutions; Summary and Key Terms; Examination Questions; Answers

#### 6. OUTPUT OR UNIT COSTING (Cost Sheet)

6.1-6.38

Learning Objectives; Costing Procedure; Price Quotations and Estimated Cost Sheet; Problems and Solutions; Summary and Key Terms; Examination Questions; Answers

#### 7. JOB AND BATCH COSTING

7.1-7.24

Learning Objectives; Job Costing Procedure; Batch Costing Procedure; Economic Batch Quantity (EBQ); Problems and Solutions; Summary and Key Terms; Examination Questions; Answers

#### 8. CONTRACT COSTING

8.1-8.43

Learning Objectives; Contract Costing and Job Costing—Distinction; Contract Costing Procedure; Special Points in Contract Costing; Work Certified and Work Uncertified; Retention Money and Cash Ratio; Profit on Uncompleted Contracts; Notional Profit; Estimated Profit; Escalation Clause; Cost-plus Contracts; Problems and Solutions; Summary and Key Terms; Examination Questions; Answers

#### 9. PROCESS COSTING

9.1-9.72

Learning Objectives; Process Costing and Job Costing—A Comparison; Process Costing Procedure; Process Losses and Wastages; Work-in-Progress (Equivalent Production); Internal Process Profits (Inter-process profits); Problems and Solutions; Summary and Key Terms; Examination Questions; Answers

#### 10. JOINT PRODUCTS AND BY-PRODUCTS

10.1-10.34

Learning Objectives; Joint Products and Co-products; Joint Costs and Subsequent Costs; Accounting for Joint Products; By-products; Accounting for By-products; Problems and Solutions; Summary and Key Terms; Examination Questions; Answers

11.1-11.33

#### 11. OPERATING COSTING (Service Costing)

Learning Objectives; Transport Costing; Boiler House and Power House Costing; Canteen Costing; Problems and Solutions; Summary and Key Terms; Examination Questions; Answers

#### 12. NON-INTEGRATED AND INTEGRATED ACCOUNTS

12.1-12.33

Learning Objectives; Non-integrated Accounts; Ledgers to be Maintained; Principal Accounts to be Maintained; Integrated Accounts; Accounting Entries; Accounting Entries; Problems and Solutions; Summary and Key Terms; Examination Questions; Answers

#### 13. RECONCILIATION OF COST AND FINANCIAL ACCOUNTS

13.1-13.25

Learning Objectives; Need for Reconciliation; Reasons for Disagreement in Profit/Loss; Method of Reconciliation; Memorandum Reconciliation Account; Problems and Solutions; Summary and Key Terms; Examination Questions; Answers

#### SECTION II: MANAGEMENT ACCOUNTING

#### 14. MANAGEMENT ACCOUNTING—NATURE AND SCOPE

14.3-14.12

Learning Objectives; Meaning and Definition of Management Accounting; Scope, Functions, or Objectives; Financial Accounting, Management Accounting and Cost Accounting Comparison; Limitations of Management Accounting

Summary and Key Terms; Examination Questions; Answers

#### 15. FINANCIAL STATEMENT ANALYSIS

15.1-15.59

Learning Objectives; Meaning of Financial Statements; Principal Tools of Analysis; Comparative Financial Statements; Common-Size Financial Statements; Trend Percentages; Ratio Analysis; Liquidity Ratios (Short-term Solvency); Capital Structure Ratios or Gearing Ratios (Long-term Solvency); Turnover Ratios (Performance Ratios or Activity Ratios); Profitability Ratios; Financial Analysis of Reliance Industries Ltd. (RIL); Summary of Formulae; Problems and Solutions; Summary and Key Terms; Examination Questions; Answers

#### 16. FUNDS FLOW STATEMENT

16.1-16.46

Learning Objectives; Meaning of Funds and Funds Slow Statement; Preparation of Funds Slow Statement; Statement of Changes in Working Capital; Distinction between Funds Flow Statement and Profit and Loss Account and Balance Sheet; Problems and Solutions; Summary and Key Terms; Examination Questions; Answers

#### 17. CASH FLOW STATEMENT

17.1-17.31

Learning Objectives; Introduction; Accounting Standard-3 (AS-3): Cash Flow Statement; Classification of Cash Flows; Preparation of A Cash Flow Statement; Objectives and Uses of Cash Flow Statement; Problems and Solutions; Summary and Key Terms; Examination Questions; Answers

#### 18. MARGINAL (VARIABLE) COSTING AND COST-VOLUME-PROFIT ANALYSIS

18.1-18.94

Learning Objectives; Introduction; Product Costs and Period Costs; Absorption Costing; Cost-Volume-Profit Analysis; Break-even Analysis; Contribution and Marginal Cost Equation; Profit-Volume Ratio (P/V Ratio); Methods of Break-even Analysis; Margin of Safety (M/S); Cost Indifference Point; Limiting or Key Factor; Graphic Presentation of Break-Even Analysis; Profit-Volume Chart; Summary of Formulae and Abbreviations; Problems and Solutions; Summary and Key Terms; Examination Questions; Answers

#### 19. BUDGETING AND BUDGETARY CONTROL

19.1-19.60

Learning Objectives; Essentials of Effective Budgeting; Preliminaries in the Installation of Budget System; Classification of Budgets; Functional Budgets; Master Budget; Fixed and Flexible Budgets; Revision of Budgets; Budget Reports; Zero Base Budgeting (ZBB); Performance Budgeting; Problems and Solutions; Summary and Key Terms; Examination Questions; Answers

#### 20. STANDARD COSTING AND VARIANCE ANALYSIS

20.1-20.88

Learning Objectives; Introduction; Standard Costing; Standard Costing vs Budgetary Control; Preliminaries in Establishing a System of Standard Costing; Standard Hour; Variance Analysis; Variances for each Element of Cost; Material Variances; Labour Variances; Overheads Variances; Variable Overheads (V.O.) Variances; Fixed Overheads (F.O.) Variances; Reporting of Variances; Control Ratios; Disposition of Variances; Summary of Formulae; Problems and Solutions; Summary and Key Terms; Examination Questions; Answers

#### 21. TACTICAL DECISION MAKING

21.1-21.72

Learning Objectives; Introduction; Decision Making and Marginal Costing; Differential Cost Analysis; Problems and Solutions; Summary and Key Terms; Examination Questions; Answers

#### 22. RESPONSIBILITY ACCOUNTING AND TRANSFER PRICING

22.1-22.16

Learning Objectives; Meaning and Definition; Responsibility Centre; Measurement of Divisional Performance; Transfer Pricing; Problems and Solutions; Summary and Key Terms; Examination Questions; Answers

#### 23. ADVANCED COST MANAGEMENT TECHNIQUES

23.1-23.23

Learning Objectives; Cost Management; Cost Reduction and Cost Control; Uniform Costing and Inter-Firm Comparison; Uniform Costing; Inter-firm Comparison; Cost Audit; Management Audit; Back Flush Costing; Target Costing; Life-Cycle Cost Analysis (LCCA); Kaizen Costing; Social Accounting and Audit; Balanced Scorecard (BSC); Summary and Key Terms; Examination Questions

SUBJECT INDEX

i.1-i.8





## Industrial Relations

C.S. VENKATA RATNAM - MANORANJAN DHAL



### Contents

Preface to the Second Edition Preface to the First Edition vi 1. Economy and the Labour Force 2.6 Substance of a Sound Industrial Relations in India System Indicators of Industrial Relations System 28 1.1 The Indian Economy Partnership Model for Sound Industrial Relations 28 Labour and Economic Planning 2 Obligations of the Management 29 Tertiarization of the Economy 3 Obligations of the Union 29 1.2 Labour Force in India—Structure, The Choices 29 Composition, and Trends 2.7 Dhal's Industrial Relations Model Labour in the Old and the New Economy 8 of Changing Power Dynamics 30 1.3 Key Issues and Critical Challenges Technology and Job Creation 9 3. Industrial Relations in a Skills Provision and Social Safety Net Development Comparative Framework Labour Mobility 10 Labour Commitment 11 3.1 Study of Comparative Industrial Work Culture 12 Relations 34 Productivity and Competitiveness 13 What and How to Compare? 35 1.4 Recession, Sustainability, and Trust—The Theoretical Perspectives 35 Crisis in Industrial Relations Convergence or Divergence in Industrial Relations 36 Annexure 1.1: Terms of Reference of the First and the 3.2 Industrialization Strategy and Industrial Second National Commission on Relations 36 Labour 17 Logic of Industrial Peace 36 Logic of Competition 37 Logic of Employment-Income Protection 37 2. Approaches to 3.3 Globalization and Industrial Relations 38 **Industrial Relations** 18 Gateways to Globalization 39 Barriers to Globalization 39 2.1 Meaning and Scope of Industrial Competition on the Basis of Cheap Labour 40 Relations 18 Disinvestment, Deregulation, and Decentralization 41 2.2 Systems Framework 21 New Actors and New Dynamics in Industrial Relations 42 Some Limitations of the Systems Framework 22 Towards Fair Globalization Modifications to the Systems Framework 23 2.3 Theoretical Perspectives 23 4. Management and Employers' Unitary 23 49 **Organizations** Phiralist 24 Radical 24 4.1 Origin and Growth Trusteeship 25 Period up to 1933 50 2.4 Rule-making and Industrial Relations 26 Period between 1933 and 1946 2.5 Basic Concepts and Values 26 Post-independence Period (1947-1990) Equity and Fairness 27 Post-liberalization Period (1991-present) 51 Power and Authority 27 4.2 Aims and Objectives of Employers' Individualism and Collectivism 27

Integrity, Trust, and Transparency 27

Organizations

| Preganization of Indian Employers 52  Federation of India 52  Secret Ballot 80  Code of Discipline 81  Secret Ballot 80  Code of Discipline 81  Solution Secognition Agreement 81  |
|--|
| Code of Discipline 81  |
|  |
| 5.6 Union Recognition Agreement 81   |
|  |
| Association of Software and Service 5.7 Problem of Free Rider 83   |
| ies 53 5.8 Non-union Firms 83  |
| Ts Vision 53 Annexure 5.1: Membership Verification Procedure 89  |
| 12 Annexure 5.2: Draft Procedure for Determination of  |
| 1's Objective 53 Relative Strength of Unions Operating in  |
| atives by NASSCOM 54 Establishments under the Central Sphere by  |
| nation of Employers' Secret Ballot 94  |
| Annexure 5.3: Code of Discipline and Criteria for  |
| Indian Employers 54 Recognition of Unions 96   |
| al Organization of Employers 55  Annexure 5.4: Illustrative Checklist of Items in an   |
| ship, Structure, and Management of  Agreement with a Union as a Recognized   |
| Union 102  |
| 55   |
| 56   |
| tion 56 6. Trade Union Structures 104  |
| 56 6.1 Models of National Trade Union  |
| 3.5  |
| analienges 57  |
| 20 I I I I I I I I I I I I I I I I I I I   |
|  |
| Turing the state of S |
| Structure of the Interest Association by the   |
| Afferent Functions of Representation and Industries or Occupations 108   |
| Control 66 Global Union Federations 108  |
| Trade Union Internationals 109   |
| Unions—Theoretical 6.3 Trade Union Structures at National  |
| lations and Level 110  |
| National Trade Union Centres 111   |
| Framework  68  Regional Political Parties and Their Trade Union  |
| s of Trade Union Movement 68 Wings 111   |
| r—Class Conflict and Communist Manifesto 68 Industrial or Sectoral Federations 111   |
| d Beatrice Webb—The Socialist Pattern of  Enterprise-level Unions 112  |
| 6 A Managarial Trade Unione 119  |
|  |
| D 1 . 1 . TAY 1 . 13.6 . 177 . 119   |
|  |
|  |
| borary Context 70 Organizing Women Workers in the Unorganized  |
| Unions in India 71 Sector 115  |
| Jnions and Economic Development 75 Why do Women Not Join Unions? 115   |
| ramework 75 Women's Representation and Gender Issues in Collective   |
| mention No. 87—Freedom of Association 75 Bargaining 115  |
| on stitution and the Freedom of Association 77 Role of International Trade Union Movement 117  |
| eatures of the Trade Unions Act, 1926 77  Monitoring Gender Equality in Trade Unions 117   |
| Union Recognition 79 6.6 Multiple Unionism 118   |
| hop or Union Shop 79 6.7 Trade Union Unity and Trade Union   |
| hip Verification 80 Mergers 118  |
| The Socialist Pattern of  Gandhi—The Concept of Trusteeship 70  Gand Relevance of the Theories in the  Industrial or Sectoral Federations Enterprise-level Unions 112  6.4 Managerial Trade Unions Managerial Response to Managers' Relations between Workers' and Monte of the Theories in the  Industrial or Sectoral Federations Enterprise-level Unions 112  6.4 Managerial Response to Managers' Relations between Workers' and Monte of the Theories in the  Unionization among Women Work   |

| 6.8 Future Direction 119  Cyber Unionism 119  Towards E-unions 119  Annexure 6.1: Global Trade Union Federations 124  Annexure 6.2: XYZ Trade Union Congress 126  Annexure 6.3: Three Wings of a Union 127 | Coverage 152 International Collective Bargaining 153 8.5 Collective Bargaining and Stakeholders 154 Government 154 Employers or Management 155 Workers or Trade Unions 155 Consumers and Community 155   |
|--|--|
| 7. Management of Trade Unions  | Relations within the Enterprise 156 Organizational Impact 156  |
| in India 128   | 8.6 Negotiating Techniques and Skills 156 Stages of Negotiation 158  |
| <ul> <li>7.1 Trade Union Constitution 128</li> <li>7.2 Functions of Trade Unions 129</li></ul>   | 8.7 Drafting of an Agreement 161 Introductory Paragraphs 161 Terms of Employment 161 Drafting 164 The Small Print 164  |
| 7.3 Internal Challenges 131  |  |
| Low Membership Density 131 Declining Union Membership 132  | 9. Tripartism and Social   |
| Representativity 133   | Dialogue 170   |
| Poor Finances 134 Major Sources and Uses of Funds 134  | 9.1 Types and Levels of Tripartite Agreements 170  |
| Financial Strength of Trade Unions 135   | ILO and Tripartism 172   |
| 7.4 External Challenges 135  | Tripartism at the National Level 172   |
| Global Competition 135   | 9.2 Assessment of Working of Tripartism 177  |
| Rapid Changes in Technology 136  | 9.3 Bipartite Consultative Machinery 178   |
| Shifting Attitudes of Government 136   | Joint Consultative Board 178   |
| Managerial Strategies and Human Resource Management  | National Apex Body 179   |
| Policies 136   | Tripartism at the State Level 179  |
| Assertion of their Rights by the Community and Consumers 137   | 9.4 Social Dialogue and the Reform Process 180   |
| 7.5 Leadership and Organizational Issues 137   | Reform Process and Social Dialogue in India 180 Tripartite Initiative in Select Cases 182  |
| Leadership 138   | Tripartite Initiatives on Select Issues 183  |
| Changing Workforce Demographics 138  | Contradictions 187   |
| Internal Democracy 139   | Public Sector Disinvestment 187  |
| Declining Union Power and Influence 140  | Workers' Cooperatives 188  |
| Strategies for Strengthening Unions and Unionism 141   | Performance or Achievements 188  |
|  | 9.5 Bipartism's Link with Tripartism 189  Tripartism's Contribution to Bipartism 189   |
| 8. Collective Bargaining 144   | Tripartism's Contribution to Bipartism 189 Bipartism's Contribution to Tripartism 190  |
|  | 9.6 Strengthening Tripartite Social Dialogue 191   |
| 8.1 The Concept 144  | 5.0 Strengtherming 2-1-  |
| 8.2 Nature of Collective Bargaining 146  | 10. The Role of Government   |
| 8.3 Legal Framework of Collective  | in Industrial Relations 200  |
| Bargaining 148   | 6, Maria Carlo Maria Carlo Car |
| Determining Collective Bargaining Agent 149  | 10.1 Divergent Perspectives 200  |
| Unorganized Sector 150   | Industrialization Strategy and Industrial Relations  |
| Unfair Labour Practices 150  | Policy 201   |
| 8.4 Levels of Dargaining and Agreements  | 10.9 Types of Government Intervented   |
| National-level Agreements 151  | 10.9 Moons of State Intervention 200   |
| Industry-cum-region was 12greenteers   | Liberalization and the Changing Role of Government   |
| Firm or Plant-level Agreements 152   | State and Multinational Corporations 209   |
| Duration of Agreements 152   |  |

12.12 Contemporary Issues in Wage System 280

| 10.5 | Role of State in Industrial Relations at the State Level 210 Phiralism and Diversity at the State Level 210 Changes in Labour Law or Policy at the State Level 212 Recognition of Bargaining Agent 212 Simplified Labour Inspection 214 New Thrust in Labour Policy 214 Permissions for Closure, Retrenchment, and Lay-off 215 Wages 215 Wage Boards 217 Limits to the Powers of the State 219 Marginalizing State Governments 219 Persistent Problems Concerning the Role of the Government in Industrial Relations 220 Future Role of the Government 221 are 10.1: Draft of Proposed Amendments in Labour Laws by the Central Government 226 | 11.5 The Contract Labour (Regulation and Abolition) Act, 1970 239 Scope, Objectives, and Definitions 240 Liability of a Principal Employer 241 Responsibility of a Contractor 241 Imperatives of Contract Labour 242 Public Policy Agenda 243 HR Agenda 243 11.6 Global Production Systems and the Evolving Phase of Employment Relationships 244 Growing Inequality, Poverty, and Unemployment 245 Annexure 11.1: Contract Labour Code (Draft) 249  12. Public Policy and Wage and Reward Systems 251 |
|------|--|--|
| 11.  | The Contract of Employment 230   | Economic Theories 251 Subsistence Theory 252   |
| 11.1 | The Industrial Employment (Standing  | Surplus Value Theory 252   |
| 11.1 | Orders) Act, 1946 230  | Wages-fund Theory 252  |
|      | Submission of Draft Standing Orders 231  | Marginal Productivity Theory 253  Bargaining Theory 254  |
|      | Certification of Standing Orders 232   | Demand and Supply 254  |
|      | Appeal 232   | Purchasing Power Theory 255  |
|      | Date of Operation of Standing Orders 232   | Behavioural Theories 255   |
|      | Register of Standing Orders 232  | 12.2 Wage System in India 257  |
|      | Posting of Standing Orders 232   | Macro-economic Considerations and Public Policy 25   |
|      | Duration and Modification of Standing Orders 233   | Legal Framework 257  |
|      | Payment of Subsistence Allowance 233   | 12.3 Payment of Wages Act, 1936 258  |
|      | Certifying Officers and Appellate Authorities to Have  | Obligation of an Employer under the Act 259  |
|      | Powers of Civil Court 233  | 12.4 Minimum Wages Act, 1948 260   |
|      | Penalties and Procedures 233   | 12.5 Payment of Bonus Act, 1965 262  |
|      | Interpretation of Standing Orders 234  | 12.5 Payment of Bonus Act, 1905 202  |
|      | Disciplinary Action for Misconduct 234   | 12.6 Profit-sharing and Stock Options 264  |
| 11.5 | 2 Model Standing Orders on Additional  | Profit-sharing 264   |
|      | Items Applicable to All Industries   | Stock Options 264  |
|      | (Schedule 1-B) 235   | Tax Treatment of Stock Options 265   |
|      | Service Record 235   | 12.7 Institutional Framework 266   |
|      | Probation 236  | Unilateral Wage Fixation 266   |
|      | Confirmation 237   | Bipartite Wage Fixations 266   |
|      | Age of Retirement 237  | 12.8 National Wage Policy 271  |
|      | Transfer 237   | 12.9 Wage Policy at the Company Level 271  |
|      | Medical Aid in Case of Accidents 237   | 12.10 Pay Structures 274   |
|      | Medical Examination 237  | 12.11 Components of a Pay Structure 275  |
|      | Secrecy 237  | Basic Wage 275   |
|      | Exclusive Service 238  | Dearness Allowance 276   |
| 11   | .3 Shops and Commercial Establishments   | Allowances 277   |
|      | Acts 238   | Methods of Payment 277  W. Josephine Schemes/Payment by Results 278  |
| 11   | .4 Interstate Migrant Workmen (Regulation of   | Wage Incentive Schemass Layring 280  |
|      | Employment and Conditions of Service) Act,   | Making PBR Schemes Effective 280   |

1979 238

|     | A CONTRACTOR OF THE PARTY OF TH |
|-----|--|
| xii | Contents   |
|     |  |

| 13. | Working Conditions, Safety, |     |  |
|-----|-----------------------------|-----|--|
|     | Health, and Environment     | 285 |  |

| 13.1 | Working Conditions, Occupational Health                     |
|------|---|
|      | and Safety 285  |
|      | Social Background and Working Conditions 286                |
|      | Ergonomics 287  |
|      | Regulatory Environment 287                                  |
|      | Factories Act, 1948 288                                     |
|      | The Employee's Compensation Act, 1923 291                   |
|      | The Employees' State Insurance Act, 1948 292                |
|      | Personal Injuries (Compensation Insurance) Act,<br>1963 294 |
|      | Evaluation of the Regulatory Framework 294                  |
|      | Difficulties and Limitations 295                            |
|      | Working Time Policy 295                                     |
|      | Occupational Health and Safety Policy 296                   |
|      | Official Indicators and Available Data 297                  |
|      | Institutional Framework and Mechanisms for Gathering        |
|      | Data 300  |

13.2 Organization Commitment 300

Measures for Occupational Health and Safety 300

Annexure 13.1: Schedule IV – Employee's Compensation

Act, 1923 306

Annexure 13.2: Schedule I — Employee's Compensation Act, 1923 307

#### 14. Dispute Resolution and Industrial Harmony

310

- 14.1 Industrial Conflict 310
  Incidence of Industrial Conflict 311
  Causes and Consequences of Industrial Conflicts in
  India 318
- 14.2 Legal Framework—The Industrial Disputes
  Act, 1947 319
  Scope and Object 319
  Authorities under this Act 322
- 14.3 Notice of Change (Chapter IIA) 324
- 14.4 Reference of Disputes to Boards, Courts, or Tribunals 325
- 14.5 Voluntary Reference of Disputes to Arbitration (Section 10A) 326
- 14.6 Procedure, Powers, and Duties of
  Authorities 327
  Procedures and Powers of Conciliation Officers, Boards,
  Courts, and Tribunals (Section 11) 327
  Power of Labour Court, Tribunals, and National
  Tribunals to Give Appropriate Relief in Case of
  Discharge or Dismissal of Workers (Section 11A) 328
  Duties of Conciliation Officers (Section 12) 328
  Duties of the Board 329

Duties of the Courts 330

Duties of Labour Courts, Tribunals, and National
Tribunals 330

Payment of Full Wages to Workers Pending Proceeding in
Higher Courts 331

Persons on Whom Settlements and Awards are
Binding 331

Period of Operation of Settlement and Awards 332

- Commencement and Conclusion of Proceedings 333
  14.7 General Prohibition on Strikes and Lockouts
  (Sections 22–25) 333
- 14.8 Unfair Labour Practices 334
- 14.9 Miscellaneous Matters (Chapter VII) 3
  Offence by Companies 336
  Conditions of Service to Remain Unchanged under
  Certain Circumstances during Pendency of
  Proceedings 336
  Special Provision for Adjudication as to Whether
  Conditions of Service Change during Pendency of
  Proceeding 336
  Recovery of Money due from an Employer 336
  Protection of Persons 337
  Representation of Parties 337
- 14.10 Recommendations of the Second National Commission on Labour (2002) 338
- 14.11 Limitations of Dispute Settlement under the Industrial Disputes Act, 1947 339

  Dispute Resolution at the Enterprise Level 341

  Alternative Dispute Redressal Mechanisms 341
- 14.12 Guiding Framework for SoundLabour–Management Relations 342

#### 15. Labour Administration 354

- 15.1 Labour Administrative Machinery 354
  Vision, Mission, Objectives, Personnel, Organizational
  Set-up (Bureau Heads) of the Ministry of Labour and
  Employment 355
  Attached Offices 355
  Subordinate Offices 356
  Autonomous Organizations 356
  Adjudicating Bodies 357
  Arbitration Body 357
  Main Subjects Dealt in the Ministry of Labour and
  Employment 358
  Central Labour Service 358
- 15.2 Improving Labour Inspection 359
  15.3 Strengthening Conciliation 362
  Problems and Issues 363
  Steps to Strengthen Conciliation 364

|       | Strengthening Labour Court Administration 365 Problems and Issues 365 Steps to Strengthen the Labour Court System 366 Promoting Alternative Dispute Resolution Mechanisms 366 | Paradigm Shift in the Labour Policy Environment 392 Align Labour Policy with Economic Policy 394 Competitive Labour Policies at the State Level 394 Labour Law Reform 395 17.2 Reviewing the Link between the Parliament, the Judiciary, and the |
|-------|---|--|
|       |   | Executive 398  |
| ппехи | ere 15.1: Organization Structure of Department  | Implications of Judge-made Law on Employers and  |
|       | of Labour, Government of<br>Maharashtra 369   | Workers 399  |
|       | <i>Маналазна</i> 505  | Relative Importance of Citizen/Consumer  |
| 16    | Social Security 370   | Rights and Social/Human Rights of Workers 399  |
|       |   | Annexure 17.1: The Second National Labour Commission—  |
| 16.1  | Social Security System in the Organized<br>Sector 371   | Major Recommendations 403  Annexure 17.2: Terms of Reference of the First and  |
| 16.2  | Indian Constitution and Legal   | the Second National Commission on  |
|       | Framework 371   | Labour 408   |
| 16.3  | Medical Care, Safety, Occupational Health,  |  |
|       | and Welfare Funds 374   | 18. Employee Participation and   |
|       | Medical Care and Health Benefits 374  | Labour-Management  |
|       | Patterns of Health Care Provision 375   | 400  |
|       | Health Care Insurance in India 375  | Cooperation 409  |
|       | Portable Health Insurance 376   | 18.1 Decision Taking to Decision-making—   |
|       | Some Issues 376<br>Safety 378   | Participation or Association with  |
|       | Occupational Health 379   | Management 409   |
|       | Welfare Funds 379   | Constitutional and Legal Framework 410   |
| 16.4  | Social Security Reform during the Period of   | Purpose and Forms of Participation 410   |
| 0.1   | Structural Adjustment 380   | Indirect Representative vs Direct Participation 410  |
|       | Privatization 380   | Participation vs Collective Bargaining 413   |
|       | Job Security 381  | Labour-Management Cooperation 416  |
| 6.5   | Trends and Issues 382   | Participation in Turnaround of Sick Units 418  |
|       | Job Security to Income Security 382   | Action Plan to Promote and Facilitate Employee Participation and Labour–Management Consultation  |
|       | Zero to Full Cover 382  | and Cooperation 420  |
|       | Welfare to Moneyfare 383  | and cooperation 120  |
|       | Ceilings Raised and/or Removed 383  |  |
|       | Portable Benefits 384   | 19. Grievances and Discipline  |
|       | Administration 384  | Handling 428   |
|       | Financing 384 Integration 385   | 19.1 Managing Employee Grievance 428   |
| 100   | to to Labour Policy and   | Definition and Legal Framework 429   |
| 17.   | Issues in Labour Policy and   | 19.2 Nature and Causes of Grievance 430  |
|       | Labour Law Reform 389   | 19.3 Grievance Procedure 431   |
| 7 1   | Key Concerns in Labour Policy 389   | Alternative Approach to Handling Grievances 432  |
| 1/.1  | Key Concerns in Labour Policy 389 The Child Labour (Regulation and Abolition)   | 19.4 Managing Discipline 433   |
|       | Act, 1986 390   | Misconduct 433   |
|       | The Factories Act, 1948 390   | Traditional Approaches to Dealing with Indiscipline 435  |
|       | The Mines Act, 1952 391   | Alternative Approaches to Dealing with Deviations 436  |
|       | Minimum Wages Act, 1948 391   | Domestic Enquiry 439   |
|       | The Labour Laws (Exemption from Furnishing Returns  | Annexure 19.1: Guiding Principles for a Grievance Procedure  |

and Maintaining Registers by Certain Establishments)

Act, 1988 392

(1958) 446

Annexure 19.2: Constitution of Grievance Committee

|      | Employment Security and Management of Redundancies 449  |  | Management of Industrial Relations 491 Managing Good Industrial Relations 491   |  |
|------|---|--|---|--|
| 20.1 | Legal Framework 450 Termination of Employment 450 Lay-off and Retrenchment (Chapter Va) 450 Special Provisions Relating to Lay-off, Retrenchment, and Closure in Certain Establishments (Chapter Vb) 453 Handling Redundancies 455 Measures to Avoid Downsizing and Minimize Job Losses 459 Voluntary/Early Retirement Schemes 460 Cost-benefit Analysis of VRS 461 Legal Aspects 462 Tax Aspects of VRS 463 Key Considerations 464 | Ten Golden Rules for Good Industrial Relations 492 International Regulation 493 OECD Guidelines 495 Global Compact 496 22.2 Future of Industrial Relations 496 Changing the Face of the Organization 496 Changing Profiles and Characteristics of the Employees 49 Emerging Trends 497 Paradigm Shift in Managing Work and Worker 498 Shifting Roles of Traditional Actors 499 New Actors on the Horizon 500 Portents for the Future 501 |   |  |
|      |   | 23.  | Human Resource Management<br>and Industrial Relations 505   |  |
|      | Factors Helping and Hindering VRS 464 How to Go about VRS? 465  Technological Change and Industrial Relations 471   |  | Management Philosophy and Approaches 505 Changing Managerial Roles 506 Rethinking Managerial Prerogatives 508 Integrative Approaches to   |  |
|      | Technological Change 471  Management Strategy/Approach 474  Trade Union Response 475  Negotiated Change 477  cure 21.1: New Technology: Checklist of Bargaining   |  | Human Resource Management 509 Human Resource Development 511 Human Resource Development Movement 511 HRM-IR-HRD Integration 514 Handling the Interface between Human Resource Management and Industrial Relations 516 |  |

#### LABOUR LAWS

| Industrial Disputes Act, 1947 Industrial Employment (Standing Orders) Act, 1946 Trade Unions Act, 1926 Payment of Wages Act, 1936 Minimum Wages Act, 1948 Payment of Bonus Act, 1965 | 540<br>548 | Workmen's Compensation Act, 1923 Employees' State Insurance Act, 1948 Employees' Provident Funds and Miscellaneous Provisions Act, 1952 Maternity Benefit Act, 1961 Payment of Gratuity Act, 1972 | 560<br>565<br>573<br>578<br>580 |
|--|------------|---|---------------------------------|
|--|------------|---|---------------------------------|

Index 584 About the Authors 593



# Fundamentals of Digital Marketing



#### **Contents**

| Preface to the Third Edition                                   | xv    |
|--|-------|
| Preface to the First Edition                                   | xvii  |
| Acknowledgements   | xxi   |
| About the Author   | xxiii |
| UNIT I BASICS OF DIGITAL MARKETING                             |       |
| UNIT BASICS OF DIGITAL MARKETING                               |       |
| Chapter 1 Introduction to Digital Marketing                    | 1     |
| Evolution of Digital Marketing                                 | 4     |
| From Traditional to Modern Marketing                           | 5     |
| Rise of the Internet: The Dotcom Era                           | 7     |
| Post Dotcom: Creation of Internet Business Models              | 8     |
| Growth of 'E' Concepts: from E-Business to Advanced E-Commerce | 11    |
| Digital—The Next Wave of Marketing                             | 17    |
| Digital Marketing: An Introduction                             | 19    |
| Emergence of Digital Marketing as a Tool                       | 20    |
| Media Consumption Drivers for New Marketing Environment        | 22    |
| Digital Marketing Channels: Types and Business Models          | 23    |
| Digital Marketing Applications and Benefits                    | 28    |
| Internet Marketing: Underlying                                 |       |
| Technology and Frameworks                                      | 30    |
| Internet Basics—Internet/Intranet/Extranet/Portals             | 31    |
| Understanding Web and Wireless Technologies                    | 31    |
| Reshaping Interactions: Individuals/Businesses/Non-Profit      | 33    |
| Opportunities and Challenges to Internet Marketing             | 36    |
| Digital Marketing Framework                                    | 37    |
| Delivering Enhanced Customer Value                             | 38    |
| Market Opportunity Analysis and Digital Services Development   | 40    |
| ASCOR Digital Marketing Framework                              | 41    |
| Application of Digital Marketing                               | 44    |
| Critical Success Factors for Digital Marketing                 | 48    |
| Chapter Summary  | 49    |
| Review Questions   | 49    |
| Digital Application Exercises                                  |       |
|  | 50    |

| Chapter 2 Digital Marketing Models Creation                            |          |
|--|----------|
| Factors Impacting Digital Marketplace                                  | 52       |
| From Brick and Mortar to Bricks and Clicks                             | 54       |
| Growth of Interactive Platforms  | 54       |
| The New Network Economy  | 56       |
| From Marketspaces to Marketplaces                                      | 59       |
| Changing Sales and Customer Service Patterns                           | 60<br>62 |
| Value Chain Digitization   | 64       |
| Understanding Value Chain Functions                                    | 65       |
| Key Value Chain Process: A Basic Understanding                         | 66       |
| Value Chain Elaboration: A Case of Journal Publishing                  | 67       |
| Emergence of Digitized Value Chain                                     | 69       |
| Digital Marketing Business Models                                      | 71       |
| Understanding Digital Value Elements                                   | 71       |
| Digital Value-Led Marketing Approach                                   | 74       |
| Digital Marketing Models Creation                                      | 75       |
| Application of Digital Marketing Models                                | 78       |
| Chapter Summary  | 81       |
| Review Questions   | 81       |
| Digital Application Exercises  | 82       |
| Chapter 3 The Consumer for Digital Marketing                           | 83       |
| Consumer Behavior on the Internet                                      | 85       |
| Evolution of Consumer Behavior Models                                  | 80       |
| Impact of Digital Technology on Consumer                               |          |
| Behavior   | 89       |
| Attributes of Online Buying Behavior                                   | 9.       |
| Influence of the Web Experience  | 9.       |
| Introduction to Data Driven Marketing                                  | 9        |
| What is Data-Driven Digital Marketing?                                 | 9.       |
| Basic Data Types   | 90       |
| Understanding Data-Driven Analytics                                    | 9        |
| Data-Driven Digital Marketing Strategy                                 | 99       |
| Examples of Data-Driven Marketing Implementation                       | 100      |
| Marketing Intelligence from User's Online Data                         | 10.      |
|  | 10.      |
| Managing Consumer Demands  | 10.      |
| Understanding Consumer Demands  Demand-Led Product Development Process | 10       |
|  | TC .     |
| Brand Building on the Web  |          |

|  | Contents   ix |
|--|---------------|
| Customer Identity and Privacy Management                           | 110           |
| Understanding Customer Identity                                    | 110           |
| Understanding Customer Data Privacy                                | 111           |
| Developing Customer Identity: The Importance of Cookies            | 112           |
| What are Website Cookies?  | 112           |
| What are website cookies used for?                                 | 112           |
| What are the different types of website cookies?                   | 113           |
| What are consent management platforms?                             | 11 4          |
| Impact of Demise of Third-Party Cookies on Marketers & Advertisers | 114           |
| Strategy for Future  | 11.5          |
| Web-Tracking Audits and Forecasting                                | 11 5          |
| Integrated Marketing Communications (IMC)                          | 117           |
| Basics of Integrated Marketing Communications (IMC)                | 117           |
| Channels for Integrated Marketing Communications                   | 119           |
| Four Pillars of the IMC Construct                                  | 121           |
| Impact of Digital Channels on IMC                                  | 123           |
| Practical Exercise   | 124           |
| Executing Consumer Analysis  | 124           |
| Chapter Summary  | 125           |
| Review Questions   | 126           |
| Digital Application Exercises                                      | 127           |
| UNIT II DIGITAL MARKETING STRATEGY DEVELOPMENT                     |               |
| Chapter 4 Digital Marketing Assessment Phase                       | 128           |
| Elements of the Assessment Phase                                   | 130           |
| Marketing Strategy and its Digital Shifts                          | 130           |
| The Assessment Phase Elements                                      | 134           |
| Macro-Micro Environment Analysis                                   | 136           |
| Marketing Situation Analysis                                       | 138           |
| Digital Marketing Internal Assessment                              | 141           |
| Analyzing Present Offerings Mix                                    | 141           |
| Marketing Mix Analysis   | 146           |
| Internal Resource Mapping  | 149           |
| Core Competencies Analysis   | 151           |
| Digital Marketing Objectives Planning                              | 153           |
| Digital Presence Analysis  | 153           |
| Digital Presence Analysis Matrix                                   | 156           |

|             | Digital Marketing Objectives Development                               | 158 |
|-------------|--|-----|
|             | Digital Marketing Objectives Review                                    | 164 |
| I           | Practical Exercise   | 165 |
|             | Market or Industry Trend Assessment                                    | 165 |
|             | Chapter Summary  | 166 |
| F           | Review Questions   | 167 |
| I           | Digital Application Exercises  | 168 |
| Chapter 5 D | Pigital Marketing Strategy Definition                                  | 169 |
| I           | Digital Marketing Strategy Groundwork                                  | 171 |
|             | Understanding Digital Business Strategy                                | 171 |
|             | Emerging Digital Business Structures                                   | 175 |
|             | Digital Core Competency Alignment                                      | 179 |
|             | Customer Development Strategy (STP 2.0 Framework)                      | 184 |
| ]           | Defining the Digital Marketing Mix                                     | 192 |
|             | Offering Mix for Digital   | 192 |
|             | Digital Pricing Models   | 196 |
|             | Channels of Purchase—Reaching the E-Consumer                           | 199 |
|             | Managing Promotional Channels  | 201 |
|             | Developing the Extended Ps- People, Process, Programs, and Performance | 203 |
| 1           | Digital Marketing Strategy Roadmap                                     | 204 |
|             | Developing Digital Marketing Strategy Roadmap                          | 204 |
|             | The 6S Digital Marketing Implementation Strategy                       | 207 |
|             | PLC Concept—Marketing across the Product Life Cycle                    | 209 |
| ]           | Practical Exercise   | 211 |
|             | Executing Competitive Research   | 211 |
| (           | Chapter Summary  | 213 |
| I           | Review Questions   | 214 |
| I           | Digital Application Exercises  | 214 |
|             |  |     |
|             | UNIT III DIGITAL MARKETING PLANNING AND SETUP                          |     |
| Chapter 6 D | igital Marketing Communications and Channel Mix                        | 216 |
|             | Digital Marketing Planning Development                                 | 217 |
| _           | The Media Planning Shift to Digital                                    | 218 |
|             | Understanding Digital Media Planning Terminology                       | 220 |
|             | Digital Media Planning Stages  | 223 |
|             | Investment Analysis and Planning for Marketing RoI                     | 231 |
|             | The content Things and I while for Transition                          |     |

|        |   | Contents   xi |
|--------|---|---------------|
|        | Designing the Communication Mix  Marketing Communications: from Mass Market | 233           |
|        | to Mass Customized  | 234           |
|        | Steps to Creating Marketing Communications Strategy                         | 236           |
|        | Developing Communications Messaging   | 239           |
|        | Communication Mix across Digital Channels                                   | 241           |
|        | Introduction to Digital Marketing Channels                                  | 243           |
|        | Intent-Based Marketing (Search Marketing)                                   | 243           |
|        | Brand-Based Marketing (Display Marketing)                                   | 247           |
|        | Community-Based Marketing (Social Media Marketing)                          | 250           |
|        | Partner, Direct, Content, and Platform-Based Marketing Channels             | 252           |
|        |   |               |
|        | Practical Exercise  | 255<br>255    |
|        | Establishing Earned Media Presence  |               |
|        | Chapter Summary   | 256           |
|        | Review Questions  | 257           |
|        | Digital Application Exercises   | 258           |
| Chapte | r 7 Digital Marketing Operations Set-up                                     | 260           |
|        | Understanding Digital Marketing Conversion                                  | 262           |
|        | Basics of Lead Generation and Conversion Marketing                          | 263           |
|        | Lead Nurturing and Lead Scoring Concepts                                    | 265           |
|        | Setting up for Conversion: from Web-Page to Landing Page                    | 268           |
|        | Lead Management across Channels—Owned, Earned, and Paid                     | 271           |
|        | Basics of Web Development and Management                                    | 273           |
|        | Pre-Planning for Web Development  | 273           |
|        | Website Development Stages  | 276           |
|        | Developing Site Diagrams and Wireframes                                     | 278           |
|        | Website Content Development and Management                                  | 279           |
|        | User Experience, Usability, and Service Quality Elements                    | 282           |
|        | Understanding Elements of User Experience                                   | 282           |
|        | Implementation of Interaction Design  | 285<br>286    |
|        | Understanding Web Usability and Evaluation                                  | 288           |
|        | Measuring Service Quality Elements  |               |
|        | Practical Exercise  | 290<br>290    |
|        | Developing Owned Media Presence   |               |
|        | Chapter Summary   | 291           |
|        | Review Questions  | 292           |
|        | Digital Application Exercises   | 293           |
|        |   |               |

#### UNIT IV DIGITAL MARKETING EXECUTION

| Chapter 8 Digital Marketing Campaign Management  | 295        |
|--|------------|
| Basic Elements of Digital Campaigns  |            |
| Basic Elements of Digital Campaign Management  | 297        |
| Campaign Planning and Budgeting  | 297        |
| Campaign Set-up and Launch   | 299<br>301 |
| Campaign Monitoring to Reconciliation  | 303        |
| Implementing Intent-Based Campaigns (Search Execution)   | 305        |
| Search Campaign Planning Basics  | 305        |
| SEM Campaign Set-up and Execution  | 308        |
| SEO Basics and Management  | 319        |
| Implementing Brand-Based Campaigns (Display Execution)   | 327        |
| Display Campaign Management Basics   | 328        |
| Emerging Data-Driven Display Models (Programmatic and RTB)                                     | 337        |
| Rich Media Ad Campaign Management  | 342        |
| Campaign Execution for Emerging Marketing Models   | 344        |
| Content Marketing (Cornerstone of Emerging Marketing Models)                                   | 345        |
| Community-Based Campaigns (Social Media Execution)   | 347        |
| Campaigns for Partner, Communication, and Platform-Based Marketing                             | 349        |
| Campaign Analytics and Marketing RoI   | 352        |
| Basics of Web Analytics  | 352        |
| Understanding KPIs   | 353        |
| Introduction to Google Analytics Web Analytics 2.0: Developing a Marketing Analytics Even work | 353        |
| Web Analytics 2.0: Developing a Marketing Analytics Framework  Marketing Implementation RoI    | 355<br>356 |
| Digital Marketing Refinement Phase   | 356<br>358 |
| Practical Exercise   |            |
| Executing Paid Promotions  | 360<br>360 |
| Chapter Summary  |            |
| Review Questions   | 362        |
|  | 363        |
| Digital Application Exercises  | 364        |
| Chapter 9 Digital Marketing Execution Elements   | 366        |
| Managing Digital Marketing Revenue   | 368        |
| Digital Revenue Generation Models  | 368        |
| Customer Loyalty Management in the Digital Era   | 370        |
| Rise of Relationship Marketing: Turning Loyalists to Advocates                                 | 372        |
| Driving Advocates through Customer Experience  | 374        |

|  | Contents   xiii |
|--|-----------------|
| Managing Service Delivery and Payment  | 376             |
| Understanding Electronic Payment Systems                                     | 376             |
| Emerging Digital Payments Solutions  | 378             |
| Managing Digital e-Services (Setting up Digital Services Unit)               | 381             |
| Selling through Cybermediaries   | 383             |
| Managing Digital Implementation Challenges                                   | 385             |
| Understanding E-commerce Implementation Challenges                           | 386             |
| Internal Challenges: Business and Infrastructure                             | 387             |
| External Challenges: Legal and Compliance                                    | 389             |
| Consumer-Specific Security, Privacy, Ethical, and Social Challenges          | 391             |
| Practical Exercise   | 393             |
| Executing Marketing Analytics  | 393             |
| Chapter Summary  | 394             |
| Review Questions   | 395             |
| Digital Application Exercises  | 396             |
| Chapter 10 Digital Business–Landscape & Emerging Areas                       | <br>397         |
|  | 399             |
| Digital Marketing Landscape  Conceptualising the Digital Marketing Landscape | 399             |
| Digital Marketing Technology/Tools Landscape                                 | 402             |
| Key Digital Advertising Trends in India                                      | 404             |
| India Digital Marketing/Advertising Tools Landscape                          | 406             |
| Digital Marketing—Emerging Trends and Concepts                               | 406             |
| Big Data & IoT- Data Technologies Impacting Marketing                        | 411             |
| B2B and SMB–Segments Based Digital Marketing                                 | 413             |
| SoLoMo-The Next level of Hyperlocal Marketing                                | 415             |
| Emerging Web 3.0 Trends  | 417             |
| Blockchain Technology  | 417             |
| Metaverse  | 419             |
| Digital Payments   | 422             |
| Audio-Social Marketing   | 423             |
| Chapter Summary  | 424             |
| Chapter 11 A Career in Digital Marketing                                     | 425             |
| Emerging Opportunities for Digital Marketing Professionals                   | 426             |
| The Changing Role of CMOs in Organizations                                   | 420             |

#### xiv | Contents

| Building a Career in Digital Marketing | 422 |
|--|-----|
| Chapter Summary                        | 431 |
| Bibliography 1                         | 433 |
| Bibliography 2                         | 466 |
| Index                                  | 473 |

## INTRODUCTION TO DATA MINING



001010001011101010101010010110100 11010010110001000001010101011100 1111110010111010101010001001000017 10001000110111111111101000101011 10 0101010101001001010100010101000001011 011111010 

SECOND

Pearson

PANG-NING TAN MICHAEL STEINBACH ANUJ KARPATNE VIPIN KUMAR

| P | refac | e to the Second Edition   | 6        |
|---|-------|---|----------|
| 1 | Intr  | roduction   | 21       |
|   | 1.1   | What Is Data Mining?  | 24       |
|   | 1.2   | Motivating Challenges   | 25       |
|   | 1.3   | The Origins of Data Mining  | 27       |
|   | 1.4   | Data Mining Tasks   | 29       |
|   | 1.5   | Scope and Organization of the Book  | 33       |
|   | 1.6   | Bibliographic Notes   | 35       |
|   | 1.7   | Exercises   | 41       |
|   |       |   | 41       |
| 2 | Dat   | a   | 43       |
|   | 2.1   | Types of Data   | 46       |
|   |       | 2.1.1 Attributes and Measurement  | 47       |
|   |       | 2.1.2 Types of Data Sets  | 54       |
|   | 2.2   | Data Quality  | 62       |
|   |       | 2.2.1 Measurement and Data Collection Issues  | 62       |
|   |       | 2.2.2 Issues Related to Applications  | 69       |
|   | 2.3   | Data Preprocessing  | 70       |
|   |       | 2.3.1 Aggregation   | 70       |
|   |       | 2.3.2 Sampling  | . –      |
|   |       | 2.3.3 Dimensionality Reduction  | 72<br>76 |
|   |       | 2.6.4 Peature Subset Selection  | 76       |
|   |       | 2.5.6 readure Creation  | 78       |
|   |       | 2.3.3 Discretization and Binarization   | 81       |
|   |       | -ioii variable fransiormation   | 83       |
|   | 2.4   | of Similarity and Dissimilarity   | 89       |
|   |       | 200100  | 91       |
|   |       | Dissimilarity between Cimela Att :  | 92<br>94 |
|   |       | TOTAL TOTAL DELINE CONTROL OF THE PROPERTY OF | 94<br>96 |
|   |       |   | )8       |

|   |      | 2.4.5 E         | Examples of Proximity Measures                                 | 99  |
|---|------|-----------------|--|-----|
|   |      | 246 N           | Intual Information   | 108 |
|   |      | 247 K           | Cernel Functions*  | 110 |
|   |      | 040 B           | Program Divergence*  | 114 |
|   |      | 9.40 To         | course in Provimity Calculation                                | 116 |
|   |      | 0 4 10 8        | Colocting the Right Proximity Measure                          | 118 |
|   | 2.5  | Dibliogra       | applic Notes   | 120 |
|   | 2.6  | Exercise        | s  | 125 |
| 3 | Clas | -:Gastia        | n. Basic Concepts and Techniques                               | 133 |
| u | 3.1  | Basic Co        | oncents  | 134 |
|   | 3.2  | Conoral         | Framework for Classification                                   | 101 |
|   | 3.3  | Decision        | Tree Classifier  | 199 |
|   | 0.0  | 331             | A Basic Algorithm to Build a Decision Tree                     | 141 |
|   |      | 332 1           | Methods for Expressing Attribute Test Conditions               | 144 |
|   |      | 333 1           | Measures for Selecting an Attribute Test Condition             | 147 |
|   |      | 3.3.4           | Algorithm for Decision Tree Induction                          | 156 |
|   |      | 3.3.5 I         | Example Application: Web Robot Detection                       | 158 |
|   |      | 3.3.6           | Characteristics of Decision Tree Classifiers                   | 160 |
|   | 3.4  | Model (         | Overfitting  | 167 |
|   | 0.1  | 3.4.1           | Reasons for Model Overfitting                                  | 169 |
|   | 3.5  | Model S         | Selection  | 176 |
|   |      | 3.5.1           | Using a Validation Set   | 176 |
|   |      | 3.5.2           | Incorporating Model Complexity                                 | 177 |
|   |      | 3.5.3           | Estimating Statistical Bounds                                  | 182 |
|   |      | 3.5.4           | Model Selection for Decision Trees                             | 182 |
|   | 3.6  | Model I         | Evaluation   | 184 |
|   |      | 3.6.1           | Holdout Method   | 185 |
|   |      | 3.6.2           | Cross-Validation   | 185 |
|   | 3.7  | Presenc         | e of Hyper-parameters  | 188 |
|   |      | 3.7.1           | Hyper-parameter Selection                                      | 188 |
|   |      | 3.7.2           | Nested Cross-Validation  | 190 |
|   | 3.8  | <b>Pitfalls</b> | of Model Selection and Evaluation                              | 192 |
|   |      | 3.8.1           | Overlap between Training and Test Sets                         | 192 |
|   |      | 3.8.2           | Use of Validation Error as Generalization Error                | 192 |
|   | 3.9  | Model           | $Comparison^* \dots \dots \dots \dots \dots \dots \dots \dots$ | 193 |
|   |      | 3.9.1           | Estimating the Confidence Interval for Accuracy                | 194 |
|   |      | 3.9.2           | Comparing the Performance of Two Models                        | 195 |
|   | 3.10 | ) Bibliog       | ${ m graphic\ Notes}$  | 196 |
|   | 3.1  | Exercis         | ses  | 205 |

|   | 4 A. | ssociat<br>1 Prob | ininguis: Basic Concepts and Algorithms   | 213   |
|---|------|-------------------|---|-------|
|   | 4.2  | Prog              | iminaries   | . 214 |
|   | 4.4  | 4.2.1             | uent Itemset Generation   | . 218 |
|   |      | 4.2.1             | 2 110 11pt tot t 1 thicipie   | . 219 |
|   |      | 4.2.3             | request Remset Generation in the Aprilott Algorithm                                     | . 220 |
|   |      | 4.2.4             | conditate Generation and Fruning  | . 224 |
|   |      | 4.2.4 $4.2.5$     | apport Counting   | . 229 |
|   | 4.3  |                   | Comparational Complexity  | . 233 |
|   | 1.0  | 4.3.1             | Generation  | . 236 |
|   |      | 4.3.2             | Coundence-Based Fruning   | . 236 |
|   |      | 4.3.3             | The deficition in Apriori Algorithm   | . 237 |
|   | 4.4  |                   | 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2   | . 238 |
|   | 7.4  | 4.4.1             | pact Representation of Frequent Itemsets  | . 240 |
|   |      | 4.4.2             | requent frequent sets   | . 240 |
|   | 4.5  |                   | Closed Temsets  | . 242 |
|   | 4.6  | FP C              | native Methods for Generating Frequent Itemsets*  | 245   |
|   | 4.0  | 4.6.1             | Frowth Algorithm*   | 249   |
|   |      | 4.6.1             |   | 250   |
|   | 4.7  |                   | Frequent Itemset Generation in FP-Growth Algorithm                                      | 253   |
|   | 4.1  | 4.7.1             | nation of Association Patterns  | 257   |
|   |      | 4.7.1 $4.7.2$     | o o Joseff of The Helesting ness  | 258   |
|   |      | 4.7.2 $4.7.3$     | - 12 castres segond I ams of Dinary variables   | 270   |
|   | 4.8  |                   | Simpson's Paradox   | 272   |
|   |      | Ellect            | of Skewed Support Distribution  | 274   |
|   | 4.9  | BIDIIO            | graphic Notes   | 280   |
|   | 4.10 | Exerc             | ises  | 297   |
| 5 | Clu  | ster A            | nalysis: Basic Concepts and Algorithms  |       |
|   | 5.1  | Overv             | iew   | 307   |
|   | 3.1  | 5.1.1             |   | 310   |
|   |      | 5.1.2             | What Is Cluster Analysis?   | 310   |
|   |      | 5.1.3             | Different Types of Clusterings.   | 311   |
|   | 5.2  |                   | Different Types of Clusters   | 313   |
|   | ٥.2  | 5.2.1             | The Basic K-means Algorithms  | 316   |
|   |      | 5.2.1 $5.2.2$     | The Basic K-means Algorithm  K-means: Additional Issues                                 | 317   |
|   |      | 5.2.2             | K-means: Additional Issues  Bisecting K-means   | 326   |
|   |      | 5.2.4             | Bisecting K-means   | 329   |
|   |      | 5.2.5             | K-means and Different Types of Clusters  Strengths and Weaknesses                       | 330   |
|   |      | 5.2.6             | Strengths and Weaknesses  | 331   |
|   | 5.3  | _                 | K-means as an Optimization Problem  | 331   |
|   | 0    | 5.3.1             | merative Hierarchical Clustering  Basic Agglomerative Hierarchical Clustering Algorithm |       |
|   |      | 5.3.2             | Specific Techniques   | 337   |
|   |      | J.J.              | ~ P ~ CALLO I COLLINGUOD  | 7.76  |

|   |     | 5.3.3          | The Lance-Williams Formula for Cluster Proximity          | . 344      |
|---|-----|----------------|---|------------|
|   |     | 5.3.4          | Key Issues in Hierarchical Clustering                     | . 345      |
|   |     | 5.3.5          | Outliers  | . 346      |
|   |     | 5.3.6          | Strengths and Weaknesses                                  | . 347      |
|   | - 4 | DDCC           | AN  |            |
|   | 5.4 |                | Traditional Density: Center-Based Approach                | . 347      |
|   |     | 5.4.1          | The DBSCAN Algorithm                                      | . 349      |
|   |     | 5.4.2          | Strengths and Weaknesses                                  | 351        |
|   |     | 5.4.3          | Strengths and Weaknesses                                  | 353        |
|   | 5.5 |                | er Evaluation   | . 252      |
|   |     | 5.5.1          | Overview  |            |
|   |     | 5.5.2          | Unsupervised Cluster Evaluation Using Cohesion and        | 256        |
|   |     |                | Separation  | . 356      |
|   |     | 5.5.3          | Unsupervised Cluster Evaluation Using the Proximity       | 004        |
|   |     |                | Matrix  |            |
|   |     | 5.5.4          | Unsupervised Evaluation of Hierarchical Clustering        |            |
|   |     | 5.5.5          | Determining the Correct Number of Clusters                |            |
|   |     | 5.5.6          | Clustering Tendency                                       |            |
|   |     | 5.5.7          | Supervised Measures of Cluster Validity                   |            |
|   |     | 5.5.8          | Assessing the Significance of Cluster Validity Measures . | 376        |
|   |     | 5.5.9          | Choosing a Cluster Validity Measure                       | 378        |
|   | 5.6 | Biblio         | graphic Notes   | 379        |
|   | 5.7 | Exerci         | ises  | 386        |
| _ |     |                |   |            |
| 6 |     |                | cion: Alternative Techniques                              | <b>395</b> |
|   |     |                | of Classifiers  |            |
|   | 6.2 |                | Based Classifier  | 397        |
|   |     | 6.2.1          | How a Rule-Based Classifier Works                         | 399        |
|   |     | 6.2.2          | Properties of a Rule Set                                  | 400        |
|   |     | 6.2.3          | Direct Methods for Rule Extraction                        | 401        |
|   |     | 6.2.4          | Indirect Methods for Rule Extraction                      | 406        |
|   | 0.0 | 6.2.5          | Characteristics of Rule-Based Classifiers                 | 408        |
|   | 6.3 | Neare          | st Neighbor Classifiers                                   | 410        |
|   |     | 0.3.1          | Algorithm   | 111        |
|   | C 1 | 6.3.2          | Characteristics of Nearest Neighbor Classifiers           | 119        |
|   | 6.4 | Naïve          | Dayes Classifier  | 414        |
|   |     | 0.1.1          | Dasies of Probability Theory                              | 415        |
|   | 6.5 | 6.4.2<br>Pares | raive Dayes Assumption                                    | 490        |
|   | 0.0 | 6.5.1          | THE THE WORKS   | 120        |
|   |     | 6.5.1          | orapinear representation                                  | 400        |
|   |     | 6.5.2          | and Learning  | 435        |
|   |     | 0.0.0          | Characteristics of Bayesian Networks                      |            |

| C- | +-   | ents | . 1      | 7 |
|----|------|------|----------|---|
| UΟ | IIU€ | 2116 | <b>.</b> |   |

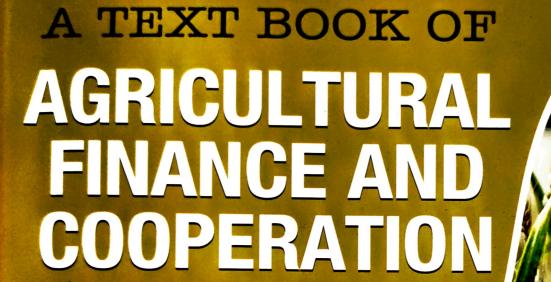
| 6.6  | Logist  | tic Regression  |
|------|---------|---|
| 0.0  | 6.6.1   | Logistic Regression as a Generalized Linear Model 446             |
|      | 6.6.2   | Learning Model Parameters   |
|      | 6.6.3   | Characteristics of Logistic Regression 450                        |
| 6.7  | Artific | cial Neural Network (ANN)   |
|      | 6.7.1   | Perceptron  |
|      | 6.7.2   | Multi-layer Neural Network 456                                    |
|      | 6.7.3   | Characteristics of ANN  |
| 6.8  | Deep :  | Learning  |
|      | 6.8.1   | Using Synergistic Loss Functions                                  |
|      | 6.8.2   | Using Responsive Activation Functions 468                         |
|      | 6.8.3   | Regularization  |
|      | 6.8.4   | Initialization of Model Parameters                                |
|      | 6.8.5   | Characteristics of Deep Learning 47                               |
| 6.9  | Suppo   | ort Vector Machine (SVM)  |
|      | 6.9.1   | Margin of a Separating Hyperplane 478                             |
|      | 6.9.2   | Linear SVM  |
|      | 6.9.3   | Soft-margin SVM   |
|      | 6.9.4   | Nonlinear SVM   |
|      | 6.9.5   | Characteristics of SVM  |
| 6.10 | Ensem   | ${f able \; Methods \; \ldots \; \ldots \; \ldots \; \ldots \; }$ |
|      |         | Rationale for Ensemble Method 499                                 |
|      |         | Methods for Constructing an Ensemble Classifier 499               |
|      | 6.10.3  | Bias-Variance Decomposition 509                                   |
|      | 6.10.4  | Bagging   |
|      |         | Boosting  |
|      | 6.10.6  | Random Forests  |
|      | 6.10.7  | Empirical Comparison among Ensemble Methods 51                    |
| 6.11 | Class 1 | Imbalance Problem   |
|      | 6.11.1  | Building Classifiers with Class Imbalance 510                     |
|      | 6.11.2  | Evaluating Performance with Class Imbalance 520                   |
|      | 6.11.3  | Finding an Optimal Score Threshold 524                            |
|      | 6.11.4  | Aggregate Evaluation of Performance                               |
| 6.12 | Multic  | lass Problem  |
| 6.13 | Bibliog | graphic Notes   |
| 6.14 | Exerci  | ses   |
|      |         |   |
| Ass  | ociatio | n Analysis: Advanced Concepts 559                                 |
| 7.1  | Handl   | ing Categorical Attributes  |
| 7.2  | Handl   | ing Continuous Attributes   |
|      | 7.2.1   | Discretization-Based Methods 569                                  |

| 1 | 8   | Co   |    |                    | 4  | ~ |
|---|-----|------|----|--------------------|----|---|
|   | × 1 | 1 :0 | nt | $\boldsymbol{e}$ n | ١. |   |
|   |     |      |    |                    |    |   |

|   |     |        | Statistics-Based Methods   | 566          |
|---|-----|--------|--|--------------|
|   |     | 7.2.2  | Statistics-Based Methods Non-discretization Methods  | 568          |
|   |     | 7.2.3  |  |              |
|   | 7.3 | Hand   | Non-discretization Methods  lling a Concept Hierarchy  | . 572        |
|   | 7.4 | Seque  | 12-1 D-44 anna   |              |
|   |     | 7.4.1  | Preliminaries  | . 576        |
|   |     | 7.4.2  | Sequential Pattern Discovery   | . 581        |
|   |     | 7.4.3  | Timing Constraints*  | . 585        |
|   | _   | 7.4.4  | Alternative Counting Schemes*  | . 587        |
|   | 7.5 |        | raph Patterns  | . 588        |
|   |     | 7.5.1  | Preliminaries  | 591          |
|   |     | 7.5.2  | Frequent Subgraph Mining   | 505          |
|   |     | 7.5.3  | Candidate Generation   | . 090<br>601 |
|   |     | 7.5.4  | Candidate Pruning  | . 001        |
|   |     | 7.5.5  | Support Counting   | . 001        |
|   | 7.6 |        | quent Patterns*  | . 601        |
|   |     | 7.6.1  | Negative Patterns  |              |
|   |     | 7.6.2  | Negatively Correlated Patterns   | . 603        |
|   |     | 7.6.3  | Comparisons among Infrequent Patterns, Negative  |              |
|   |     |        | Patterns, and Negatively Correlated Patterns   | . 604        |
|   |     | 7.6.4  | Techniques for Mining Interesting Infrequent Patterns  | . 606        |
|   |     | 7.6.5  | Techniques Based on Mining Negative Patterns   | . 607        |
|   |     | 7.6.6  | Techniques Based on Support Expectation  | . 609        |
|   | 7.7 | Biblio | graphic Notes  | . 613        |
|   | 7.8 | Exerci | ises   | 620          |
| _ |     |        |  | . 020        |
| 8 | Clu | ster A | nalysis: Additional Issues and Algorithms  | 633          |
|   | 8.1 | Chara  | cteristics of Data, Clusters, and Clustering Algorithms  | . 634        |
|   |     | 0.1.1  | Example: Comparing K-means and DRSCAN  | 624          |
|   |     | 8.1.2  | Data Characteristics   | 625          |
|   |     | 8.1.3  | Cluster Characteristics  | 007          |
|   |     | 8.1.4  | General Characteristics of Chistering Algorith   | 000          |
|   | 8.2 | Protot | y pe Based Clustering  | 0.41         |
|   |     | 8.2.1  | Fuzzy Clustering Clustering Using Mixture Models   | . 641        |
|   |     | 8.2.2  | Clustering Using Mixture Models  | . 641        |
|   |     | 8.2.3  | Self-Organizing Mans (SOM)   | . 647        |
|   | 8.3 | Densit | Self-Organizing Maps (SOM)   | . 657        |
|   |     | 8.3.1  |  | 001          |
|   |     | 8.3.2  | - Lased Clustering   | 001          |
|   |     | 8.3.3  | Pass Clastering  | 668          |
|   |     | -      | The file-based Scheme for Done's Done |              |
|   |     |        | Clustering   | 679          |

|   | 8.4 | Graph         | -Based Clustering  |
|---|-----|---------------|--|
|   |     | 8.4.1         | Sparsification   |
|   |     | 8.4.2         | Minimum Spanning Tree (MST) Clustering 678   |
|   |     | 8.4.3         | OPOSSUM: Optimal Partitioning of Sparse Similarities   |
|   |     |               | Using METIS  |
|   |     | 8.4.4         | Chameleon: Hierarchical Clustering with Dynamic  |
|   |     |               | Modeling   |
|   |     | 8.4.5         | Spectral Clustering  |
|   |     | 8.4.6         | Shared Nearest Neighbor Similarity 693   |
|   |     | 8.4.7         | The Jarvis-Patrick Clustering Algorithm 696  |
|   |     | 8.4.8         | SNN Density  |
|   |     | 8.4.9         | SNN Density-Based Clustering 699   |
|   | 8.5 | Scalab        | de Clustering Algorithms   |
|   |     | 8.5.1         | Scalability: General Issues and Approaches 701   |
|   |     | 8.5.2         | BIRCH  |
|   |     | 8.5.3         | CURE   |
|   | 8.6 | Which         | Clustering Algorithm?  |
|   | 8.7 |               | graphic Notes  |
|   | 8.8 |               | ses  |
|   |     |               |  |
| 9 | And |               | Detection 723  |
|   | 9.1 | Chara         | cteristics of Anomaly Detection Problems 725   |
|   |     | 9.1.1         | A Definition of an Anomaly   |
|   |     | 9.1.2         | Nature of Data   |
|   |     | 9.1.3         | How Anomaly Detection is Used  |
|   | 9.2 | Chara         | cteristics of Anomaly Detection Methods 728  |
|   | 9.3 |               | tical Approaches   |
|   |     | 9.3.1         | Using Parametric Models  |
|   |     | 9.3.2         | Using Non-parametric Models  |
|   |     | 9.3.3         | Modeling Normal and Anomalous Classes 735  |
|   |     | 9.3.4         | Assessing Statistical Significance   |
|   |     | 9.3.5         | Strengths and Weaknesses   |
|   | 9.4 |               | nity-based Approaches  |
|   | 0.1 | 9.4.1         | Distance-based Anomaly Score   |
|   |     | 9.4.2         | Density-based Anomaly Score  |
|   |     | 9.4.3         | Relative Density-based Anomaly Score   |
|   |     | 9.4.4         | Strengths and Weaknesses   |
|   | 9.5 |               | ering-based Approaches   |
|   | J.U | 9.5.1         | Finding Anomalous Clusters   |
|   |     | 9.5.1 $9.5.2$ | Finding Anomalous Clusters   |
|   |     | 9.5.2 $9.5.3$ |  |
|   |     | B             | CONTRACTOR DELICATION OF THE CONTRACTOR OF THE C |

| <b>2</b> 0 | Co    | ntents  |     |
|------------|-------|---|-----|
|            |       | Reconstruction-based Approaches                                 | 748 |
|            | 9.6   | Reconstruction-based Approaches  9.6.1 Strengths and Weaknesses | 751 |
|            |       | 9.6.1 Strengths and Weakhesses                                  | 752 |
|            | 9.7   | One-class Classification 9.7.1 Use of Kernels                   | 753 |
|            |       | 9.7.1 Use of Kernels<br>9.7.2 The Origin Trick                  | 754 |
|            |       |   |     |
|            | 2.0   | 9.7.3 Strengths and Weaknesses                                  | 758 |
|            | 9.8   |   |     |
|            | 0.0   |   |     |
|            | 9.9   | Evaluation of Anomaly Detection                                 | 762 |
|            | 9.10  | Exercises   | 769 |
|            | 9.11  | Exercises   |     |
| 10         | Δνο   | iding False Discoveries   | 775 |
| 10         | 10.1  | Proliminarios: Statistical Testing                              | 776 |
|            | 10.1  | 10.1.1 Significance Testing                                     | 776 |
|            |       | 10.1.2 Hypothesis Testing                                       | 781 |
|            |       | 10.1.3 Multiple Hypothesis Testing                              | 787 |
|            |       | 10.1.4 Pitfalls in Statistical Testing                          | 796 |
|            | 10.2  | Modeling Null and Alternative Distributions                     | 798 |
|            | 10.2  | 10.2.1 Generating Synthetic Data Sets                           | 801 |
|            |       | 10.2.2 Randomizing Class Labels                                 | 802 |
|            |       | 10.2.3 Resampling Instances                                     | 802 |
|            |       | 10.2.4 Modeling the Distribution of the Test Statistic          |     |
|            | 10.3  | Statistical Testing for Classification                          |     |
|            | 20.0  | 10.3.1 Evaluating Classification Performance                    |     |
|            |       | 10.3.2 Binary Classification as Multiple Hypothesis Testing     |     |
|            |       | 10.3.3 Multiple Hypothesis Testing in Model Selection           | 806 |
|            | 10.4  | Statistical Testing for Association Analysis                    | 807 |
|            |       | 10.4.1 Using Statistical Models                                 | 808 |
|            |       | 10.4.2 Using Randomization Methods                              | 814 |
|            | 10.5  | Statistical Testing for Cluster Analysis                        | 815 |
|            |       | 10.5.1 Generating a Null Distribution for Internal Indices      | 816 |
|            |       | 10.5.2 Generating a Null Distribution for External Indices      | 218 |
|            |       | 10.5.3 Enrichment   | 218 |
|            | 10.6  | Statistical Testing for Anomaly Detection                       | 820 |
|            | 10.7  | Bibliographic Notes   | 823 |
|            | 10.8  | Exercises   | 828 |
|            |       |   | 020 |
| A          | utho  | r Index   | 833 |
| Su         | ıbjec | t Index   | 846 |
| Co         | pyri  | ght Permissions   | 856 |

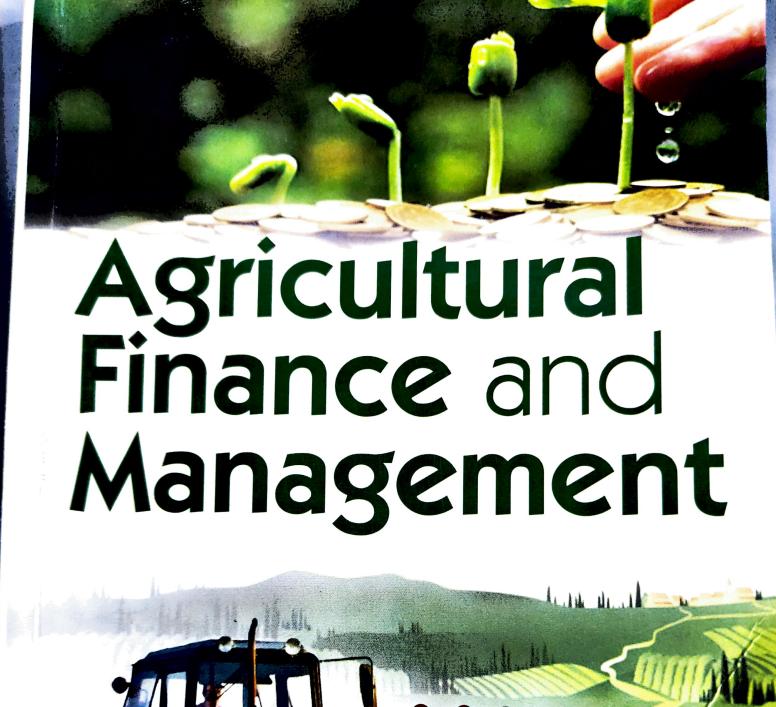


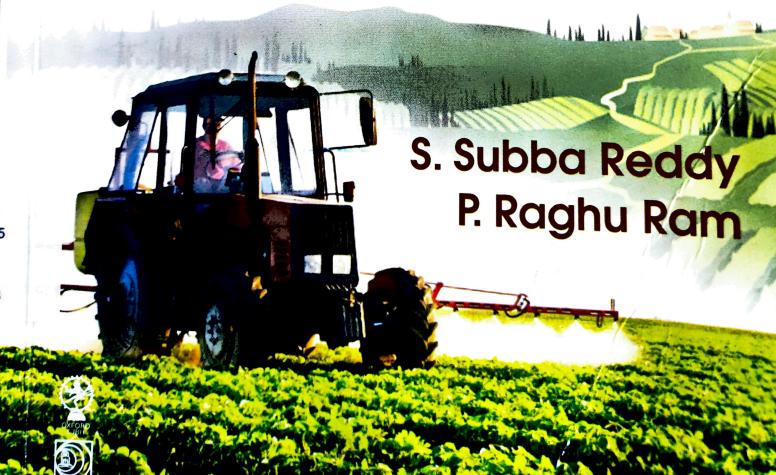
R.K. Rout



## CONTENTS

| S.No. | Chapters  | Page No. |
|-------|---|----------|
| 1.    | Introduction to Agricultural Finance  | 1–9      |
| 2.    | Agricultural Credit   | 10–22    |
| 3.    | Credit Analysis   | 23–40    |
| 4.    | Sources of Agricultural Finance   | 41–53    |
| 5.    | Commercial Banks: Social Control and Nationalization                              | 54–65    |
| 6.    | Multi-agency Approaches and Different Schemes in Agricultural Finance             | 66–83    |
| 7.    | Regional Rural Banks  | 84–90    |
| 8.    | Microfinance and KCC  | 91–105   |
| 9.    | Introduction to Higher Financing Institutions                                     | 106–130  |
| 10.   | World Bank, IMF and ADB   | 131–150  |
| 11.   | Recent Development in Agricultural Credit   | 151–157  |
| 12.   | Loan Repayment Plan   | 158–166  |
| 13.   | Preparation and Analysis of Financial Statements in Agri-farm Business            | 167–190  |
| 14.   | Basic Guidelines for Preparation of Project Reports, Bank Norms and SWOT Analysis | 191–201  |
| 15.   | Agricultural Cooperation  | 202–259  |
| 16.   | International Cooperative Alliance (ICA)  | 260–274  |
| 17.   | National Cooperative Union of India (NCUI)  | 275–284  |
| 18.   | National Cooperative Development Corporation (NCDC)                               | 285–288  |
| 19.   | National Agricultural Cooperative Marketing Federation (NAFED)                    | 289–296  |
|       | Sample Papers   | 297–303  |





## **CONTENTS**

| $p_{7}$ | eface  | ii            |
|---------|--|---------------|
| 1.      | Agricultural Finance—Concepts and Scope  | 1             |
|         | Importance of Agricultural Finance   |               |
|         | Farm financial management  | $\frac{2}{2}$ |
|         | Farm financial management decisions  | 2             |
|         | Characteristics of farm financial decisions  | 3             |
|         | Steps in the process of farm financial management  | 6             |
|         | Scope of farm financial management   | 8             |
|         | Classification of loans or credit  | 9             |
|         | 2. Agencies of Agricultural Finance  |               |
|         | · · · · · · · · · · · · · · · · · · ·  | 16            |
|         | Co-operative Finance   | 16            |
|         | State Co-operative Bank (SCB)  | 18            |
|         | District Central Co-operative Banks (DCCBs)  | 19            |
|         | Primary agricultural cooperative credit societies  | 19            |
|         | Central land development bank  | 20            |
|         | Primary land development banks   | 20            |
|         | Single window system   | 21            |
|         | Large-sized adivasi multipurpose co-operative societies  | 22            |
|         | Farmers service societies  | 23            |
|         | Social control and nationalization of banks  | 24            |
|         | State bank of India  | 26            |
|         | Specialised branches  Multi agency approach  | 27            |
|         | Multi-agency approach  | 28            |
|         | Branch expansion   | 29            |
|         | Village adoption scheme<br>Lead bank scheme  | 30<br>30      |
|         | Regional rural banks   | 31            |
|         | List of RRBs   | 32            |
|         | Characteristic features of regional rural banks  | 32            |
|         | Differential rate of interest scheme   | 34            |
|         | Farm graduate scheme   | 35            |
|         | Deposit Insurance and Credit Guarantee Corporation of Ind  |               |
|         | Role of the corporation  | 36            |
|         | Service area approach  | $\sqrt{37}$   |
|         | A CONTRACTOR OF THE CONTRACTOR |               |

| Crop Loan System                                    | 00       |
|---|----------|
| Salient features of the system                      | 38       |
| District credit plans                               | 39<br>40 |
| District consultative committee                     | 40       |
| Higher Financing Agencies                           | 41       |
| World bank  | 41       |
| International monetary fund                         | 42       |
| International finance corporation                   | 43       |
| International development association               | 43       |
| Reserve Bank of India                               | 43       |
| Provision of finance                                | 45       |
| Promotional activities                              | 45       |
| Regulatory functions of RBI                         | 45       |
| Credit control or credit squeeze                    | 46       |
| Fiscal policy                                       | 46       |
| Credit rationing                                    | 47       |
| Agricultural Refinance and Development Corporation  | 47       |
| Sources of capital                                  | 49       |
| Management  | 49       |
| National Bank for Agriculture and Rural Development | 49       |
| Objectives  | 50       |
| Functions   | 50       |
| Board of management                                 | 51       |
| Sources of funds                                    | 52       |
| Agricultural Finance Corporation                    | 52       |
| Financing role                                      | 53       |
| Promotional role                                    | 53       |
| Outlines of Recommendations of Khusro Committee and | - 1      |
| Narasimham Committee                                | 54       |
| Khusro committee's report                           | 54       |
| Narasimham committee's report                       | 54       |
| Programmes of Rural Development—SFDA and MFAL       | 55       |
| Functions of SFDA                                   | 56<br>56 |
| Functions of MFAL                                   | 56       |
| Integrated rural development programme              | 57       |
| Specific objectives                                 | 57       |
| Identification of beneficiaries                     | 58       |
| Subsidies   | 58       |
| Progress of IRDP                                    | 58       |
| Merits of IRDP over earlier programmes              | 59       |
| Comprehensive Crop Insurance Scheme                 |          |

|    | CONTENTS  |           |
|----|---|-----------|
|    |   | vii       |
|    | Origin of crop insurance scheme Advantages of crop insurance    | 59        |
|    | Advantages of crop insurance                                    | 61        |
| 3. | Economic Principles Applied to Financial Management of the Farm | 62        |
|    | Importance of Economic Principles in the Farm Financial         |           |
|    | Management  | 62        |
|    | Law of Diminishing Returns                                      | 63        |
|    | Decision rule   | 65        |
|    | Principle of Marginalism  | 66        |
|    | Decision rules  | 68        |
|    | Principle of Substitution or Factor-Factor Relationship         | 69        |
|    | Decision rule   | 71        |
|    | Principle of Combining Enterprises or Product-Product           |           |
|    | Relationship  | 71        |
|    | Competitive enterprises   | <b>72</b> |
|    | Optimal enterprise combination                                  | <b>72</b> |
|    | Decision rule   | 73        |
|    | Mathematical derivation of optimal enterprise combination       | 75        |
|    | Principle of Equi-Marginal Returns                              | 76        |
|    | Decision rule   | 76<br>77  |
|    | Principle of Comparative Advantage                              | 78        |
|    | Decision Rule   | 80        |
|    | Opportunity Cost Principle                                      | 81        |
|    | Cost Principle  | 85        |
|    | Relationship among costs  | 87        |
| 4. | Tests of Farm Credit Proposals                                  | 87        |
|    | Economic Feasibility Tests of Credit                            | 88        |
|    | Returns from the investment                                     | 88        |
|    | Repayment capacity  | 93        |
|    | Measures to strengthen risk bearing ability                     | 94        |
|    | Five Cs' of Credit  | 94        |
|    | Character   | 94        |
|    | Capacity  | 94        |
|    | Capital   | 94        |
|    | Condition   | 95        |
|    | Commonsense   | 95        |
|    | 'Seven Ps' of Credit  | 95        |
|    | Principle of productive purpose                                 | 96        |
|    | Principle of personality  | 96<br>97  |
|    | Principle of productivity                                       | 97        |
|    | Principle of phased disbursement                                | 98        |
|    | Principle of proper utilization                                 | 50        |
|    | Principle of payment  |           |

|             | Principle of protection                               | 98  |
|-------------|---|-----|
|             | Acquisition of capital                                | 99  |
|             | Principle of Owner's Equity and Increasing Risk       | 99  |
|             | Statement of the principle                            | 100 |
|             | Procedural Formalities in Sanction of Farm Loans      | 101 |
|             | Interview with the farmer                             | 101 |
|             | Submission of loan application by the farmer          | 102 |
|             | Scrutiny of records                                   | 102 |
|             | Visit to the farmer's fields before sanction of loan  | 102 |
|             | Criteria for loan eligibility                         | 103 |
|             | Sanction of loan                                      | 103 |
|             | Submission of requisite documents                     | 103 |
|             | Disbursement of loan                                  | 103 |
|             | Post-credit follow-up measures                        | 104 |
|             | Recovery of loan                                      | 104 |
|             | Repayment Plans                                       | 105 |
|             | Straight-end payment plan or single repayment plan or |     |
|             | lumpsum repayment plan                                | 105 |
|             | Partial repayment plan or balloon repayment plan      | 105 |
|             | Amortised repayment plan                              | 105 |
|             | Variable repayment plan                               | 108 |
|             | Optional repayment plan                               | 109 |
|             | Reserve repayment plan or future payments             | 109 |
| <b>5.</b> ' | Tools of Financial Analysis                           | 110 |
|             | Farm Planning and Budgeting                           | 110 |
|             | Planning techniques                                   | 111 |
|             | Budgeting   | 111 |
|             | Enterprise budgeting                                  | 112 |
|             | Balance Sheet or Net Worth Statement                  | 113 |
|             | Precautions in preparing the balance sheet of a       |     |
|             | business farm   | 115 |
|             | Test ratios   | 116 |
|             | Income statement or profit and loss statement         | 118 |
|             | Financial test ratios                                 | 120 |
|             | Management ratios                                     | 122 |
|             | Cash flow statement                                   | 122 |
|             | Advantages of cash flow budget                        | 125 |
|             | Break-even analysis                                   | 125 |
|             | Margin of safety                                      | 129 |
| <b>6.</b>   | Application of Regression Models to                   | 130 |
|             | Financial Management                                  |     |
|             | Production Functions—Their Importance                 | 130 |
|             | Production Function with One Variable Input           | 130 |

|    | CONTENTS   | ix         |
|----|--|------------|
|    | Derivation of Optimum Input Level                          | 131        |
|    | Cohb Dauglas Braduction Francticus and my                  | 132        |
|    | Interpretation of a and b parameters                       | 133        |
|    | Deriving Demand for an Input from Production Function      | 135        |
|    | Profit Maximization under Constrained Conditions           | 137        |
|    | Numerical example  | 139        |
|    | Optimal Input Use Levels from General Production Functions | 141        |
|    | Dummy Variable Technique (Step Function)                   | 143        |
|    | Piecewise Linear Regression Model                          | 144        |
|    | Cost Function  | 145        |
|    | Statistical Cost Functions                                 | 146        |
|    | Specification of the Cost Function                         | 147        |
|    | Shape of the Cost Curves vis-a-vis Decision Making         | 148        |
|    | Derivation of cost function from production function       | 148        |
|    | Issues in the Estimation of Cost Functions                 | 149        |
|    | Probit Model (Normit Model)                                | 150        |
|    | Steps involved in the probit model                         | 151        |
|    | Logit Model  | 151        |
|    | Linear probability model                                   | 152        |
|    | Linear Discriminant Function—Applications                  | 152        |
|    | Procedure for estimation of discriminant function          | 152        |
|    | Criterion for selection of variables                       | 157        |
|    | Growth Models  | 157        |
|    | Linear growth rates  | 157        |
|    | Compound growth rates                                      | 158        |
| 7. | <b>Application of Operations Research Methods to</b>       | <b>160</b> |
|    | Financial Management                                       |            |
|    | Linear Programming   | 161        |
|    | Components of LP Problem                                   | 161        |
|    | Assumptions of LP Problem                                  | 162        |
|    | Basic Concepts in LP                                       | 164        |
|    | Simplex Method   | 167        |
|    | Steps involved in solving the LP problem                   | 167        |
|    | Procedure for computation of iterations                    | 169        |
|    | Computation of other rows in section II                    | 172        |
|    | Computation of 'Z' row for section II                      | 172        |
|    | Criterion for stopping computation of sections             | 172        |
|    | Dual Solution  | 173        |
|    | Development of the linear programming model                | 176        |
|    | Equality constraints                                       | 176        |
|    | Minimisation Problem                                       | 177        |
|    | Sensitivity Analysis or Parametric Programming             | 178        |
|    | Variable Price Programming                                 | 180        |

|    | Variable Resource Programming                                  | 180        |
|----|--|------------|
|    | Normative Crop Planning under Changing Situations              | 181        |
|    | of Credit Supply   |            |
|    | Planning under Risk  | 182        |
|    | Need for planning the whole farm                               | 182        |
|    | Quadratic Risk Programming Model                               | 182        |
|    | MOTAD (Minimisation of Total Absolute Deviation) Model         | 183        |
|    | Illustration of MOTAD model for a hypothetical Indian          |            |
|    | farm   | 185        |
|    | Derivation of demand for capital                               | 186        |
|    | Linear Programming vis-a-vis Budgeting                         | 188        |
|    | Linear Programming vis-a-vis Production Function               | 189        |
| 8. | Agricultural Projects—Evaluation                               | 192        |
|    | Agricultural Projects—Meaning, Definition and Concepts         | 192        |
|    | Project  | 193        |
|    | Types of Agricultural Projects                                 | 193        |
|    | Water resource development projects                            | 193        |
|    | Agricultural credit projects                                   | 193        |
|    | Agricultural development projects                              | 194        |
|    | Agro-industries and commercial development projects            | 194        |
|    | Phases in Project Cycle  | 194        |
|    | Conception or identification of the project                    | 195        |
|    | Formulation or preparation                                     | 196        |
|    | Appraisal or analysis  | 198        |
|    | Implementation   | 198<br>199 |
|    | Monitoring   | 199        |
|    | Evaluation   | 200        |
|    | Criteria for Selection of Agricultural Projects                | 200        |
|    | Methodological Issues in Financial and Economic                | 200        |
|    | Evaluation of Agricultural Projects                            | 202        |
|    | Benefit estimation   | 202        |
|    | Methodology for social benefit-cost<br>Social rate of discount | 203        |
|    | Shadow prices of investment                                    | 205        |
|    | Investment Analysis  | 206        |
|    | Time value of money  | 206        |
|    | Undiscounted Measures  | 209        |
|    | Payback period   | 209        |
|    | Proceeds per rupee of outlay                                   | 210        |
|    | Average annual proceeds of rupee outlay                        | 210        |
|    | Discounted measures  | 210        |
|    | Net present worth  | 211        |
|    | Benefit-cost ratio   | 213        |

| CONTENTS                                  | хi  |
|---|-----|
| Internal rate of return                   | 213 |
| Profitability index                       | 217 |
| Appropriate Selection of Choice Indicator | 217 |
| Sensitivity Analysis                      | 218 |
| 9. Lending Aspects of Development Schemes | 220 |
| Scheme for Financing Mango Plantation     | 220 |
| Scheme for Financing Inland Fish Culture  | 221 |
| Scheme for Financing Sericulture          | 221 |
| Scheme for Financing Dairy                | 222 |
| Scheme for Financing Pipeline             | 223 |
| Scheme for Financing Sheep Farming        | 224 |
| Appendix A                                | 229 |
| Appendix B                                | 234 |
| Appendix C                                | 245 |
| Glossary                                  | 248 |

.



## A TEXTBOOK ON AGRO AGRO INFORMATICS

M. Kalpana & C.S. Sumathi



|    | Pref | ace                                       | V          |
|----|------|---|------------|
|    |      | out the Author(s)                         | vii        |
| ۱. | INT  | RODUCTION TO COMPUTERS                    | 1          |
|    | I.   | Overview of Computers                     | 1          |
|    |      | A. Characteristics of Computer            | 1          |
|    |      | 1) Advantages of Computers                | 2          |
|    |      | 2) Limitations of Computers               | 2          |
|    |      | B. Generations of Computers               | . 2        |
|    | II.  | Basic Anatomy of the Computer System      | 3          |
|    |      | A. Input Devices                          | 4          |
|    |      | 1) Keyboard                               | 4          |
|    |      | 2) Mouse                                  | 5          |
|    |      | 3) Joystick                               | $\epsilon$ |
|    |      | 4) Light Pen                              | 7          |
|    |      | 5) Trackball                              | 7          |
|    |      | 6) Scanner                                | 8          |
|    |      | 7) Digitizer                              | 8          |
|    |      | 8) Microphone                             | 9          |
|    |      | 9) Magnetic Ink Card Reader (MICR)        | 9          |
|    |      | 10) Optical Character Reader (OCR)        | 10         |
|    |      | 11) Bar Code Readers                      | 10         |
|    |      | 12) Optical Mark Reader (OMR)             | 11         |
|    |      | 13) Central Processing Unit               | 11         |
|    |      | 14) Storage or Memory unit                | 11         |
|    |      | 15) Arithmetic and Logical Unit (ALU)     | 12         |
|    |      | 16) Control Unit                          | 12         |
|    |      | B. Output Devices                         | 12         |
|    |      | 1) Monitors                               | 13         |
|    |      | 2) Cathode-Ray Tube (CRT) Monitor         | 13         |
|    |      | 3) Disadvantages of CRT                   | 13<br>14   |
|    |      | 4) Flat-Panel Display Monitor 5) Printers | 14         |
|    |      |   | 11         |

|    |      | 6) Impact Printers  | 14       |
|----|------|---|----------|
|    |      | 7) Character Printers   | 15       |
|    |      | 8) Dot Matrix Printer   | 15       |
|    |      | 9) Daisy Wheel  | 16       |
|    |      | 10) Line Printers   | 16       |
|    |      | 11) Drum Printer  | 17       |
|    |      | 12) Chain Printer   | 17       |
|    |      | 13) Non-impact Printers   | 18       |
|    |      | 14) Laser Printers  | 18       |
|    |      | 15) Inkjet Printers   | 19       |
|    | III. | Memory: Primary and Secondary.  | 20       |
|    |      | A. Memory of Computer   | 20       |
|    |      | B. Units of Memory  | 20       |
|    |      | C. Conversion   | 20       |
|    |      | D. Types of Memory  | 21       |
|    |      | 1) Primary Memory   | 21       |
|    |      | 2) RAM  | 21       |
|    |      | 3) ROM  | 21       |
|    |      | E. Secondary Memory   | 21       |
|    | IV.  | Review Question   | 23       |
|    | 14.  | A. Multiple Choice Questions  | 23       |
|    |      | B. Short Notes / Brief Answers  | 24       |
|    |      |   | 25       |
| 2. | SOI  | FTWARE  | 25       |
|    | I.   | Introduction to Software  | 25       |
|    | II.  | Types of Software   | 25       |
|    |      | A. System Software  | 25       |
|    |      | 1) Operating System   | 26       |
|    |      | 2) Language Processor   | 26       |
|    |      | 3) Device Drivers   |          |
|    |      | B. Application Software   | 26<br>27 |
|    |      | C. Utility Software   | 27<br>27 |
|    | III. | Software Terminologies  |          |
|    |      | A. Firmware   | 27       |
|    |      | B. Liveware   | 27       |
|    |      | C. Freeware   | 28<br>28 |
|    |      | D. Shareware  | 28       |
|    |      | E. Commercial Software F. Proprietary Software                          | 28       |
|    |      | <ul><li>F. Proprietary Software</li><li>G. Semi-free Software</li></ul> | 29       |
|    | I    |   | 29       |
|    |      | ~   |          |

| Contents |  |  |  |
|----------|--|--|--|
|          |  |  |  |

ΧV

|    |      | <ul><li>A. Multiple Choice Questions</li><li>B. Short Notes / Brief Answers</li></ul> | 29<br>30        |
|----|------|---|-----------------|
| 3. | INT  | ERNET AND HTML  |                 |
| J. | I.   | Introduction to Internet  | <b>31</b><br>31 |
|    | II.  | World Wide Web  | 32              |
|    |      | A. Web Page   | 32              |
|    |      | B. Website  | 32              |
|    |      | C. Hyperlink  | 32              |
|    |      | D. Search Engine  | 33              |
|    | III. | Uniform Resource Locator (URL)  | 33              |
|    | IV.  | Domain Names  | 33              |
|    | V.   | Protocols: http, https  | 34              |
|    |      | A. HTTP (Hypertext Transfer Protocol)   | 34              |
|    |      | B. HTTPS (Hypertext Transfer Protocol Secure)   | 35              |
|    | VI.  | Internet Applications   | 35              |
|    |      | A. Email  | 35              |
|    |      | B. Features of E-mail are:  | 35              |
|    |      | C. E-Mail Address   | 35              |
|    |      | D. File sharing Web Apps  | 36              |
|    |      | E. Types of File Sharing  | 36              |
|    |      | F. Social Networks  | 36              |
|    |      | G. Online Shopping  | 36              |
|    |      | H. Video Conferencing   | 36              |
|    |      | I. Modes of Video Conferencing  | 37              |
|    | VII. |   | 37              |
|    |      | A. HTML Document  | 37              |
|    |      | 1) HTML Tags  | 37              |
|    |      | 2) Web Browsers   | 38              |
|    |      | 3) DOCTYPE Declaration  | 38              |
|    |      | 4) HTML Editors   | 39              |
|    |      | 5) HTML Documents   | 40              |
|    |      | 6) HTML Time element  | 40<br>41        |
|    |      | 7) HTML Links - Hyperlinks  | 41              |
|    |      | 8) HTML Links - Syntax  | 41              |
|    |      | 9) Local Links  | 41              |
|    |      | 10) HTML Link Colors  | 42              |
|    |      | 11) HTML Links - The target Attribute   | 42              |
|    |      | 12) HTML Links - Image as Link  | 43              |
|    |      | 13) HTML Images   | 43              |
|    |      | 14) HTML Elements   |                 |

|    |       | and a series of the Aug. The Aug.                            |                |
|----|-------|--|----------------|
|    |       | 15) HTML Attributes  | 43             |
|    |       | 16) The lang Attribute                                       | 44             |
|    |       | 17) The title Attribute                                      | 44             |
|    |       | 18) The href Attribute                                       | 44             |
|    |       | 19) Size Attributes  | 44             |
|    |       | 20) HTML Headings<br>21) The HTML <head> Element</head>      | 45             |
|    |       | •  | 45             |
|    |       | 22) HTML Paragraphs  | 45             |
|    |       | 23) HTML Display   | 46             |
|    |       | 24) HTML Comment Tags  | 46             |
|    |       | 25) HTML Comment Tags  | 46             |
|    |       | 26) HTML Table   | 47             |
|    |       | 27) Table Heading  | 47             |
|    |       | 28) Cellpadding and Cellspacing Attributes                   | 48             |
|    |       | 29) Tables Backgrounds                                       | 49             |
|    |       | 30) Table Height and Width                                   | 50             |
|    |       | 31) Table Caption  | 51<br>52       |
|    |       | 32) Table Header, Body, and Footer 33) HTML List             | 52<br>53       |
|    |       | 34) Unordered HTML List                                      | 53<br>54       |
|    |       | 35) Unordered HTML List - Choose List Item Marker            | 54             |
|    |       | 36) Ordered HTML List Choose List Hem Warker                 | 5 <del>5</del> |
|    |       | 37) Ordered HTML List - The Type Attribute                   | <i>55</i>      |
|    | VIII  | . Review Question  | 58             |
|    | V 111 |  |                |
|    |       | A. Multiple Choice Questions  B. Short Notes / Brief Answers | 58             |
| _  |       | Districted / Brief Philowells                                | 59             |
| 4. |       | CTRONIC SPREADSHEET  | 60             |
|    | I.    | Introduction to Electronic Spreadsheet                       | 60             |
|    | II.   | Microsoft Excel  | 60             |
|    | ***   | A. Microsoft Excel Window Components                         | 61             |
|    | III.  | Worksheet Manipulation: Insert, Delete, Move, Copy           |                |
|    |       | and Hide Worksheet   | 62             |
|    |       | 1) To Create a New, Blank Workbook                           | 62             |
|    |       | 2) To Open an Existing Workbook                              | 62             |
|    |       | 3) To Move Worksheet   | 62             |
|    |       | 4) To move around the worksheet                              | 63             |
|    |       | 5) To copy a worksheet                                       | 64             |
|    |       | 6) To hide a Worksheet                                       | 64<br>65       |
|    |       | 7) Unhiding Worksheet  | 65             |
|    | IV.   | Cell Manipulation: Copy, Edit and Format Cell Data           | 65             |

| Contents | xvii |
|----------|------|
|----------|------|

|    |       | A. To Copy/cut and Paste Cell Content   | 65       |
|----|-------|---|----------|
|    |       | B. To Drag and Drop Cells   | 65       |
|    |       | 1) Positioning the mouse to drag and drop cells                                       | 66       |
|    |       | C. To Select a Cell   | 66       |
|    |       | D. To Select Multiple Cells   | 66       |
|    |       | E. To Insert Content  | 67<br>67 |
|    |       | F. To Delete Content within Cells   | 67<br>68 |
|    |       | G. To Delete Cells  | 68       |
|    |       | Simple Formulas     Creating Simple Formulas  | 68       |
|    |       | <ul><li>2) Creating Simple Formulas</li><li>3) Working with Basic Functions</li></ul> | 68       |
|    |       | H. Basic Functions  | 69       |
|    |       | 1) The Parts of a Function  | 69       |
|    | V.    | Charts - Create Bar and Pie Charts  | 70       |
|    |       | A. Chart  | 70       |
|    | VI.   | Types of Charts   | 70       |
|    |       | A. Chart Tools  | 73       |
|    |       | 1) To Change the Chart Type   | 74       |
|    | VII.  | Pivot table   | 74       |
|    |       | A. Illustration   | 74       |
|    |       | B. Insert a Pivot Table   | 74       |
|    |       | C. Drag Fields  | 75       |
|    | VIII. | Review Question   | 77       |
|    |       | A. Multiple Choice Questions  | 77       |
|    |       | B. Short Notes / Brief Answers  | 78       |
| 5. | DAT   | ABASE MANAGEMENT SYSTEM (DBMS)  | 79       |
|    | I.    | Introduction to Database Management System  | 79       |
|    |       | A. The need for Data Base Management System   | 79       |
|    |       | B. Objectives of Data Base Management System  | 80       |
|    |       | C. Characteristics of the Database Management System                                  | 80       |
|    | II.   | Introduction to Relational Database Management System                                 | 81       |
|    |       | A. DBMS Vs. RDBMS   | 81       |
|    |       | 1) Table  | 82       |
|    |       | 2) Field  | 82       |
|    |       | 3) Row  | 82       |
|    |       | 4) Column   | 83       |
|    |       | 5) Data Types 6) Character Deta T   | 83       |
|    | ŢŦŦ   | 6) Character Data Type  | 83       |
|    | III.  | Database Architecture   | 84       |

|    |             | A. Types of Database Management System Architecture          | 84             |
|----|-------------|--|----------------|
|    |             | 1) Single tier architecture                                  | 84             |
|    |             | 2) Two-tier architecture                                     | 85             |
|    |             | 3) Three-tier architecture                                   | 86             |
|    | IV.         | Use of Database in Agriculture                               | 86             |
|    |             | A. Need for Agricultural Database                            | 87             |
|    | V.          | Review Question  | 87             |
|    |             | A. Multiple Choice Questions                                 | 87             |
|    |             | B. Short Notes / Brief Answers                               | 88             |
| 6. | INT         | RODUCTION TO COMPUTER PROGRAMMING                            | 89             |
|    | I.          | Overview of Computer Programming                             | 89             |
|    | II.         | Programming Languages  | 89             |
|    |             | A. Machine Language  | 90             |
|    |             | B. Assembly Language   | 90             |
|    |             | C. High-level Language                                       | 92             |
|    | III.        | Translators: Compilers and Interpreters                      | 93             |
|    |             | A. Compiler  | 93             |
|    |             | B. Interpreter   | 94             |
|    | Π,          | C. Summary of Compiler and Interpreter                       | 94             |
|    | IV.         | Algorithm  | 95             |
|    | <b>T</b> 7  | A. Design an Algorithm                                       | 95             |
|    | V.          | Flowchart  | 95             |
|    |             | A. Flowchart Symbols   | 96             |
|    |             | 1) Terminator  | 96             |
|    |             | 2) Process   | 96             |
|    |             | 3) Document  | 96             |
|    |             | 4) Decision  | 96             |
|    |             | 5) Data  | 96<br>96       |
|    |             | 6) Delay or Bottleneck<br>7) Flow                            | 96             |
|    |             | 8) Need for Flowchart  | 97             |
|    | VI.         |  | 97             |
|    | <b>V</b> 1. | Review Question  | 97             |
|    |             | A. Multiple Choice Questions  B. Short Notes / Brief Answers | 99             |
| 7  | 1617-       | offert Hotes / Brief Allswers                                |                |
| 7. | IN I I      | RODUCTION TO C   | <b>100</b> 100 |
|    | II.         | Overview of C  | 100            |
|    | 11.         | Structure of C Program                                       | 101            |
|    |             | A. Pre-processor Directives                                  | IOI            |

| Contents | C | O | nt | e | n | ts |
|----------|---|---|----|---|---|----|
|----------|---|---|----|---|---|----|

| X | IX |
|---|----|
|   |    |

|    |       | B. Header Files                                  | 101 |
|----|-------|--|-----|
|    | III.  | Data Types in C                                  | 103 |
|    | IV.   | Variable   | 104 |
|    |       | A. Rules for Naming C Variable                   | 104 |
|    |       | B. Declaring and Initializing C Variable         | 104 |
|    | V.    | Constants  | 104 |
|    | VI.   | Operators  | 105 |
|    | VII.  |  | 107 |
|    | VIII. | Review Question                                  | 110 |
|    |       | A. Multiple Choice Questions                     | 110 |
|    |       | B. Short Notes / Brief Answers                   | 111 |
| 8. |       | NTROL STATEMENTS IN C                            | 112 |
|    | I.    | Introduction to Control Statements               | 112 |
|    | II.   | Decision-making Statements                       | 112 |
|    |       | A. Decision Making with if Statement             | 113 |
|    |       | 1) Syntax  | 113 |
|    |       | B. Decision Making with if-else Statement        | 113 |
|    |       | 1) Syntax  | 114 |
|    |       | C. Decision Making with Nested if else Statement | 114 |
|    |       | 1) Syntax  | 115 |
|    |       | D. Decision Making with else-if Ladder Statement | 115 |
|    |       | E. Switch Statement                              | 117 |
|    |       | 1) Syntax  | 118 |
|    | III.  | Loop Statement                                   | 118 |
|    |       | A. While Loop                                    | 118 |
|    |       | 1) Examples of an infinite while loop            | 120 |
|    |       | 2) Use of Logical operators in while loop        | 121 |
|    |       | B. do-while Loop                                 | 122 |
|    |       | 1) While vs dowhile loop in C                    | 123 |
|    |       | C. For loop                                      | 123 |
|    |       | 1) Explanation                                   | 124 |
|    | IV.   | Review Question                                  | 125 |
|    |       | A. Multiple Choice Questions                     | 125 |
|    |       | B. Short notes / Brief Answers                   | 126 |
| 9. | AGF   | RO-INFORMATICS AND EAGRICULTURE                  | 127 |
|    | I.    | Agro-Informatics                                 | 127 |
|    | II.   | Needs and Objectives                             | 128 |
|    | III.  | e-Agriculture                                    | 130 |

|      | A. Components of e-Agriculture                        | 131 |
|------|---|-----|
|      | B Applications of e-Agriculture                       | 131 |
|      | C. Precision Agriculture                              | 132 |
|      | D. e-Commerce in Agriculture                          | 133 |
|      | E. e-Agriculture and its Importance                   | 133 |
|      | F. Challenges of e-Agriculture                        | 134 |
|      | IV. Review Question                                   | 134 |
|      | A. Multiple Choice Questions                          | 134 |
|      | B. Short Notes / Brief Answers                        | 135 |
| 10.  | E-AGRICULTURE: NATIONAL AND INTERNATIONAL             |     |
|      | SCENARIO  | 136 |
|      | I. Introduction                                       | 136 |
|      | II. e-Agriculture: National Scenario                  | 137 |
|      | III. e-Agriculture: International Scenario            | 140 |
|      | A. Case Studies                                       | 140 |
|      | IV. References  | 141 |
| ,    | V. Review Question                                    | 141 |
|      | A. Multiple Choice Questions                          | 141 |
|      | B. Short Notes / Brief Answers                        | 142 |
| 11.1 | PURPOSE OF ICT  |     |
| Ι    |   | 143 |
| •    |   | 143 |
|      | A. Components of ICT                                  | 143 |
|      | 1) Benefits of ICT in agriculture                     | 145 |
|      | B. ICT for Data Collection                            | 145 |
|      | 1) Requirements                                       | 145 |
|      | C. ICT Enabled Tools for Data Collection              | 146 |
| I    | I. ICT for Monitoring and Evaluation (M&E) Programmes | 149 |
|      | A. Cost Reduction                                     | 149 |
|      | B. Increased Accuracy                                 | 150 |
|      | C. Richer Data  | 150 |
|      | D. Greater Outreach                                   | 151 |
|      | E. Better Insights                                    | 151 |
| II   | II. Reference   | 152 |
| I    | V. Review Question                                    | 152 |
|      | A. Multiple Choice Questions                          | 152 |
|      | B. Short Notes / Brief Answers                        | 153 |
| 12 D |   | _   |
|      | ECISION SUPPORT SYSTEMS                               | 154 |
| I.   | Introduction to Decision Support Systems (DSS)        | 154 |

| _            |     |     |
|--------------|-----|-----|
| $C_{\Delta}$ | nto | nts |
| $\mathbf{v}$ | ше  | ยเอ |

|         | A. Characteristics and Capabilities         | 154 |
|---------|---|-----|
| II.     | Taxonomy                                    | 155 |
| III.    | Components of Decision Support Systems      | 155 |
| IV.     | Framework of Decision Support Systems       | 156 |
| V.      | Classification of Decision Support Systems  | 157 |
| VI.     | Decision Support Systems in Agriculture     | 158 |
|         | A. DSSAT                                    | 158 |
|         | 1) DSS in crop productivity improvement     | 159 |
|         | 2) DSS in crop water requirement management | 160 |
|         | 3) DSS in irrigation scheduling             | 160 |
|         | 4) DSS based on climatic data               | 160 |
|         | 5) DSS is the advisory system               | 161 |
|         | B. Nutrient Management                      | 161 |
|         | C. Insect and Pest Management               | 161 |
|         | D. Forest Management Decision Support       | 162 |
| VII.    | Review Question                             | 162 |
|         | A. Multiple Choice Questions                | 162 |
|         | B. Short Notes / Brief Answers              | 163 |
| 13. EXF | PERT SYSTEM                                 | 164 |
| I.      | Introduction                                | 164 |
|         | A. Definitions of an Expert System          | 164 |
|         | B. History of Expert System                 | 165 |
|         | C. Characteristic of Expert System          | 165 |
| II.     | Components of Expert System                 | 165 |
| III.    | Expert System Designing                     | 166 |
|         | A. Identification of the Input Problem      | 166 |
|         | B. Knowledge Acquisition                    | 166 |
|         | C. Representation of Knowledge              | 167 |
|         | 1) Knowledgebase                            | 167 |
|         | 2) Inference engine                         | 167 |
|         | D. Rule-based Expert Systems                | 168 |
|         | 1) Declarative and procedural knowledge     | 168 |
|         | 2) Advantages                               | 168 |
|         | 3) Disadvantages                            | 168 |
|         | E. Model-Based Expert System                | 168 |
|         | 1) Advantages                               | 169 |
|         | 2) Disadvantages                            | 169 |
|         | F. Case-Based Reasoning Systems             | 169 |
|         | 1) Cases are either collected from          | 169 |

| Agro- | Informatics |  |
|-------|-------------|--|
|-------|-------------|--|

| $\sim$ |   |  |
|--------|---|--|
| ^^     | П |  |

| 2) Advantages<br>3) Disadvantages   | 170           |
|---|---------------|
| IV. Pros of Expert System   | 170           |
| V. Cons of Expert System  | 170           |
| VI. Expert System in Agriculture  | 170<br>170    |
| VII. Information Systems for Supporting Farm D                            | Decisions 173 |
| VIII. Review Question   | 173           |
| <ul> <li>A. Multiple Choice Questions</li> </ul>                          | 173           |
| B. Short Notes / Brief Answers  | 174           |
| 14. AGRICULTURAL MODELS   | 175           |
| <ol> <li>Introduction to Computer-based Agricultura</li> </ol>            | al Models 175 |
| A. Model  | 175           |
| B. Simulation II. System Analysis Models                                  | 175           |
| <ul><li>II. System Analysis Models</li><li>III. Subsystems</li></ul>      | 177           |
| IV. Mechanistic Process Models  | 177           |
| V. Operational Models   | 178           |
| VI. Statistical and Dynamic Simulation Models                             | 178           |
| A. Statistical Simulation Model   | 179           |
| B. Dynamic Simulation Model   | 179           |
| VII. List of Agricultural Models  | 179           |
| A. Sub-Models   | 180           |
| B. Graphical and Checklist Models   | 180           |
| C. Crop Environment Models  | 180           |
| VIII. Review Question   | 181<br>181    |
| A. Multiple Choice Questions  |               |
| B. Short Notes / Brief Answers  | 181           |
|   | 182           |
| 15. COMPUTER CONTROLLED DEVICES  I. Introduction to Computer controlled D | 183           |
| Devices   | s 183         |
|   | 184           |
| A. Sensor   | 184           |
| 1) Sensors in Agriculture   | 184           |
| B. List of Agriculture Sensors  | 184           |
| C. Uses of Agriculture Sensors  | 185           |
| 1) Advantages of Agriculture Sensors                                      | 185           |
| 2) Disadvantages of Agriculture Sensors                                   | 185           |
| III. Drones   | 186           |
| A. Uses of Drones in Agriculture  | 187           |
| 1) Soil and Field Analysis  | 187           |

| Contents | xxiii |
|----------|-------|
| Contents | ,     |

|         | 2) Seed Planting                           | 187        |
|---------|--|------------|
|         | 3) Crop Spraying and Spot Spraying         | 187        |
|         | 4) Crop Mapping and Surveying              | 187        |
|         | 5) Irrigation Monitoring and Management    | 188        |
|         | 6) Real-Time Livestock Monitoring          | 188        |
| IV.     | Robots                                     | 188        |
|         | A. Agricultural Robot Applications         | 188        |
| V.      | Review Question                            | 189        |
|         | A. Multiple Choice Questions               | 189        |
|         | B. Short Notes / Brief answers             | 190        |
| 16. INT | ERNET OF THINGS (IOT) AND CLOUD COMPUTING  | à          |
|         | R AGRICULTURE                              | 191        |
| I.      | Overview of Internet of Things (IoT)       | 191        |
|         | A. Introduction                            | 191        |
|         | B. Internet of Things (IoT)                | 191        |
|         | C. Definition                              | 192        |
|         | D. Characteristics                         | 193        |
|         | 1) Dynamic and Self Adapting               | 193        |
|         | 2) Self-Configuring                        | 193        |
|         | 3) Interoperable Communication Protocols   | 193        |
|         | 4) Unique Identity                         | 193        |
|         | 5) Integrated into Information Network     | 193        |
| II.     | Cloud computing                            | 193        |
|         | A. Understanding Public and Private Clouds | 194        |
|         | B. Public Cloud                            | 195        |
|         | C. Private Cloud                           | 195<br>195 |
|         | D. Hybrid Cloud                            | 195        |
|         | E. Cloud Computing Benefits                | 196        |
|         | 1) Reduced Cost                            | 196        |
|         | 2) Increased Storage                       | 196        |
|         | 3) Flexibility                             | 196        |
|         | F. Cloud Computing Challenges              | 196        |
|         | 1) Data Protection                         | 196        |
|         | 2) Data Recovery and Availability          | 197        |
|         | 3) Management Capabilities                 | 197        |
| III     |  | 198        |
|         | A. Application of IoT in Agriculture       | 198        |
|         | B. IoT Challenges in Agriculture           | 199        |
| IV      | Cloud IoT and Agriculture                  |            |

#### xxiv

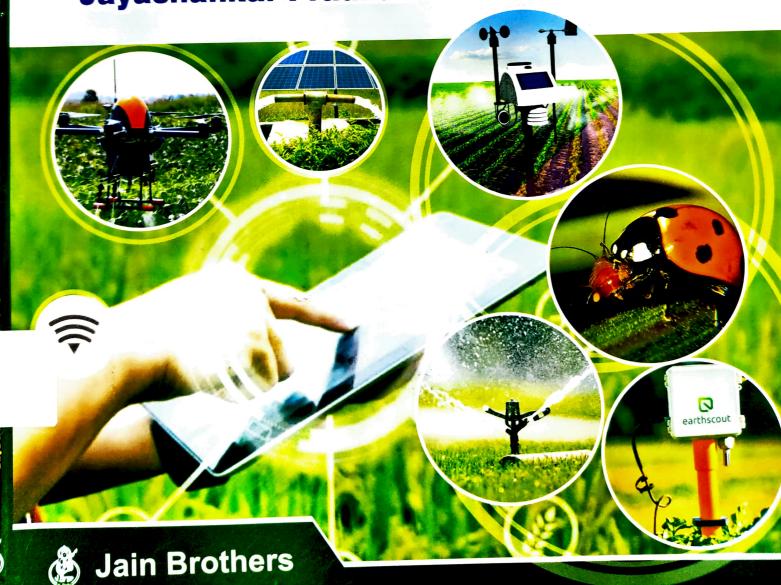
|    | A. Benefits of Cloud IoT and Agriculture   | 199 |
|----|--|-----|
|    | B. Challenges in Cloud IoT and Agriculture | 200 |
| V. | Review Question                            | 201 |
|    | A. Multiple Choice Questions               | 201 |
|    | B. Short notes / Brief Answers             | 201 |
|    |  |     |

2nd Edition

## Introductory Agri-Informatics

## According to New ICAR Syllabus

Subrat Kumar Mahapatra Prof. (Dr.) Prasannajit Mishra Jayashankar Pradhan



| S.N. | Name of the Chapter   | Page No. |
|------|---|----------|
| 1.   | Introduction to Agri-Informatics  | 1–2      |
| 2.   | Introduction To Computers   | 3-15     |
| 3.   | Operating Systems and Its Types   | 16–21    |
| 4.   | Database, Concepts and Types  | 22–24    |
| 5.   | Database Management System (DBMS), Use of DBMS is Agriculture _             | 25–29    |
| 6.   | World Wide Web (WWW)-Concepts and Components                                | 30–47    |
| 7.   | Geospatial Technology   | 48–54    |
| 8.   | Decision Support System   | 55–63    |
| 9.   | Agriculture Expert System   | 64–67    |
| 10.  | Soil Information System   | 68–70    |
| 11.  | Preparation of Contingency Crop Planning                                    | 71–78    |
| 12.  | Artificial Intelligence and IoT (Internet of Things) in Agriculture         | 79–86    |
| 13.  | Computer-Controlled Device (Automated System) in Agriculture                | 87–90    |
| 14.  | Smartphone Apps in Agriculture  | 91–104   |
| 15.  | E-Agriculture, Concepts and Application                                     | 105–108  |
| 16.  | Information and Communication Technology in Agriculture                     | 109–114  |
| 17.  | Crop Simulation Model   | 115–122  |
| 18.  | Computer Programming Language   | 123–135  |
| 19.  | IT Application in Computation of Water and Nutrient Requirement             | 136–139  |
| 20.  | Application of MS-Office in Document Creation, Presentation,                |          |
|      | Graph Creation and Statistical Analysis                                     | 140–146  |
| 21.  | Abbreviations   | 147–148  |
| 22.  | Shortcut Keys MS-Excel  | 149–156  |
|      | Glossary  |          |
|      | Objective Questions   |          |
|      | Objective Types Questions on Computers (MCQ) Questions and Ans.             |          |
| 25.  | Sample Question Papers for Semester Examination of Agricultural Informatics | 192–198  |

## Stored Grain Pests and Their Management



| 1. Importance of Grain Conservation and Pest Management                                   | 1   |
|---|-----|
| <ol> <li>History and Development of Food Grain Storage and Pest<br/>Management</li> </ol> | 6   |
| 3. Identification and Classification of Insects   | 16  |
| 4. Arachnida  | 78  |
| 5. Storage Fungi  | 83  |
| 6. Losses of Produced Commodity at Post-Harvest Handling                                  | 98  |
| 7. Origin, Source and Nature of Infestation   | 132 |
| 8. Principles and Methods of Storage  | 140 |
| 9. Use of Preservatives, Protectants, Fumigants and Nontoxic Agents                       | 171 |
| 0. Pesticides Hazards, Tolerance Limits and Pesticide Resistance                          | 207 |
| 11. Rats and Their Management   | 224 |
| 12. Packaging of Foodgrains   | 240 |
| 13. Seed Grain in Stores  | 257 |
| 14. The Future  | 260 |
| Appendix 1: Taxonomic Classification of Storage Fungi                                     | 263 |
| Appendix 2: Scientific Names of Common Species of Rats                                    |     |
| Found in Different Parts of the World   | 264 |
| Appendix 3: Brief Biology of Commonly Occurring Rats                                      |     |
| and Mice  | 265 |
| Appendix 4: Brief Identification Marks of Common Indian Rats                              | 266 |



## INTRODUCTORY BIOLOGY

P.K. Sehgal

**KALYANI** 

## CONTENTS

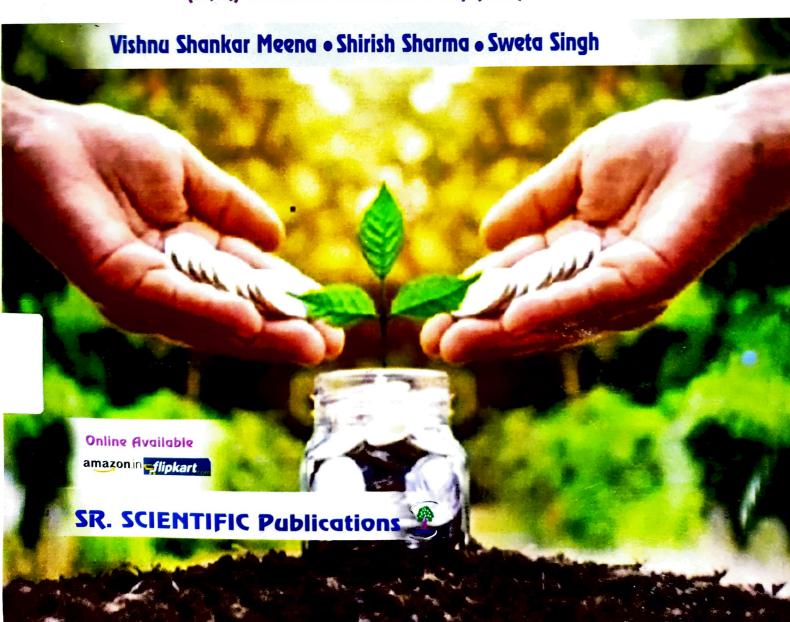
### **PART 1: BOTANY**

| 1.  | Angiosperms Taxonomy                               | 1–36    |
|-----|--|---------|
| 2.  | Algae : General Account                            | 37–54   |
| 3.  | Fungi  | 55–77   |
| 4.  | Bryophyta : General Account                        | 78–79   |
| 5.  | Pteridophytes : General Account                    | 80–91   |
| 6.  | Cycadales: Cycas                                   | 92–117  |
| 7.  | External Morphology of Vegetative and Floral Parts | 118–120 |
| 8.  | Modifications of Roots, Stems and Leaves           | 121–145 |
| 9.  | Inflorescence                                      | 146–153 |
| 10. | Plant Cell   | 154–161 |
| 11. | Tissue System                                      | 162–173 |
| 12. | Anatomy of Roots, Stems and Leaves                 | 174–189 |
|     | PART 2 : ZOOLOGY                                   |         |
| 13. | General Classification of Animal Kingdom           | 191–220 |
| 14. | Structure and Function of Cell                     | 221–236 |
|     |  |         |

| 15. Cell Division                | 237–258 |
|----------------------------------|---------|
| 16. Origin of Life               | 259–307 |
| 17. Histology of Gut             | 308–325 |
| 18. Digestion                    | 326–340 |
| 19. Respiration                  | 341–357 |
| 20. Circulation                  | 358-373 |
| 21. Coordination                 | 374–387 |
| 22. Excretion and Osmoregulation | 388–400 |
| 23. Cell Organelles              | 401–422 |
| 24. Endocrine System             | 423–449 |

# A TEXT BOOK OF AGRICULTURAL FINANCE AND COOPERATION

"Based on the New Curriculum"
As Per the Dean's Committee of Indian Council of Agricultural Research
(ICAR) & National Education Policy (NEP)



| Chapter   | Particulars                                    | Page No |
|-----------|--|---------|
| Chapter 1 | Introduction                                   | 01-07   |
|           | Agricultural credit in India                   |         |
|           | Importance and Scope of Agricultural Finance   |         |
|           | Importance of Agricultural Finance             |         |
|           | Scope of Agricultural Finance                  |         |
|           | Financial Management                           |         |
|           | History Of Finnancing Agriculture in India     |         |
| Chapter 2 | Agricultural Finance study at Aggregate Level  | 08-12   |
| •         | Role of Credit for Agricultural Development    |         |
|           | Agricultural Credit-meaning,                   |         |
|           | Definition, Need and Classification            |         |
|           | Sources of Agriculture Credit                  |         |
|           | Non-institutional/Informal                     |         |
|           | Institutional Sources/ Formal                  |         |
|           | Three tier Cooprative system                   |         |
| Chapter 3 | Classification of Agricultural credit or Loans | 13-18   |
|           | Test of farm credit proposals                  |         |
|           | Agricultural Credit                            |         |
|           | Utilization pattern of credit                  |         |
|           | Costs of credit                                |         |
|           | Utilization of credit                          |         |
|           | Extent of repayment                            |         |
|           | Over dues                                      |         |
|           | Factors responsible for over dues              |         |
|           | Factors response over dues                     |         |
| Chapter 4 | Economic Feasibility Tests of Credit           | 19-22   |
|           | Returns from the Investment                    |         |
|           | Repayment capacity                             |         |
|           | Measures to Strengthen Repayment Capacity      |         |
|           | Risk Bearing Ability                           |         |
| Chapter 5 | Five "Cs' of Credit                            | 23-26   |
|           | Character                                      |         |
|           | Capacity                                       |         |
|           | Capital  |         |
|           | Condition                                      |         |
|           | Commonsense                                    |         |
|           | Repayment                                      |         |

| Chapter 6  | Seven "Ps'of Credit                             | 27-30 |
|------------|---|-------|
|            | Principle of productive purpose                 |       |
|            | Principle of personality                        |       |
|            | Principle of productivity                       |       |
|            | Principle of proper utilization                 |       |
|            | Principle of phased disbursement                |       |
|            | Principle of payment                            |       |
| Chapter 7  | Loan Process & formalities                      | 31-37 |
| 1          | Step 1 - Appraisal                              |       |
|            | Step 2 - Security Evaluation                    |       |
|            | Step 3 - Loan Sanction                          |       |
|            | Step 4 - Disbursement                           |       |
| Chapter-8  | Repayment plans:                                | 38-40 |
| -          | Straight-end repayment plan or single repayment |       |
|            | plan or lumpsum repayment plan                  |       |
|            | Partial repayment plan or Balloon repayment     |       |
|            | plan  |       |
|            | Amortized repayment plan                        |       |
|            | Amortized decreasing repayment plan             |       |
|            | Amortized even repayment plan or Equated        |       |
|            | annual installment method                       |       |
|            | Variable repayment plan (or) Quasi-variable     |       |
|            | repayment plan                                  |       |
|            | Optional repayment plan                         |       |
|            | Reserve repayment plan (or) Future repayment    |       |
|            | plan  |       |
| Chapter-9  | Crop Loan System                                | 41-47 |
|            | the following banks offer Crop Loans            |       |
|            | Salient features of the crop loan system:       |       |
|            | Scale of Finance                                |       |
|            | Kisan Credit Card                               |       |
|            | Eligibility Criteria to Apply for KCC           |       |
| Chapter-10 | Schemes for financing weaker sections:          | 48-51 |
|            | Integrated Rural Development Programme          |       |
|            | Ganga Kalyan Yojana                             |       |
|            | Swarnajayanti Gram Swarozgar Yojana             |       |
|            | Self Help Groups                                |       |
|            | Small Farmers Development Agency                |       |
|            | Marginal Farmers and Agricultural               |       |
|            | Labourers Development Agency                    |       |

| Chapter-11 | THE RESIDENCE OF THE PROPERTY | 52-59 |
|------------|---|-------|
|            | Commercial Banks:   |       |
|            | Functions of Commercial Bank  |       |
|            | Policies and Performance of Commercial Banks  |       |
|            | The branch expansion  |       |
|            | Regional Distribution of Commercial Bank<br>Branches  |       |
|            | Number of Rural and Semi Urban Bank Branches in India   |       |
|            | Sect oral allocation lending to Priority Sector   |       |
|            | Categories of Priority Sector   |       |
| Chapter-12 |   | 60-67 |
|            | The International Bank for Reconstruction and   | 00-07 |
|            | Development (IBRD)  |       |
|            | Objectives of World Bank  |       |
|            | Capital Resource of World Bank  |       |
|            | World Bank Lending to India   |       |
|            | World Bank Operations   |       |
| Chaper-13  | Institutional   | (0.02 |
|            | International Monetary Fund   | 68-83 |
|            | IMF Operations  |       |
|            |   |       |
|            | The International Monetary Fund and the World Bank briefly  |       |
|            |   |       |
|            | Reserve Bank of India (RBI)   |       |
|            | RBI Funtion   |       |
|            | National bank for agriculture and rural   |       |
|            | development   |       |
|            | Asian development bank:   |       |
|            | Objective and Activities  |       |
|            | Cooperation between Bank and IMF  |       |
| Chapter-14 | Primary Agricultural Credit Society   | 84-88 |
|            | Introduction of PACS  | 04-00 |
|            | Function of PACS  |       |
|            | Objective of PACS   |       |
| Chapter-15 | NAFED (National Agricultural Cooperative  | 90.01 |
|            | Marketing Federation of India)  | 89-91 |
|            | Introduction of NAFED   |       |
|            | Objectives of NAFED   |       |
|            | Role of NAFED   |       |
| Chapter-16 |   | 00.01 |
|            | Regional Rural Banks (RRBs)   | 92-96 |
|            | History of Regional Rural Banks (RRBs) Features   |       |
|            |   |       |
|            | Progress of RRBs in India   |       |

|            | Dumaga mice Ducale un of DDD 1                               |         |
|------------|--|---------|
|            | Purpose-wise Break up of RRB advances (Amount Rs. in crores) |         |
|            | Performance  |         |
|            | The steps proposed for strengthening the RRBs                |         |
|            | include  |         |
|            | Problems   |         |
|            | Factors influencing the performance of RRBs                  |         |
| Chapter-17 | Insurance  | 97-103  |
|            | What is Insurance  | 27-103  |
|            | Crop Insurance   |         |
|            | Credit Guarantee Corporation                                 |         |
| Chapter-18 | Projects   | 104-109 |
|            | Decision Criteria for choice of Agricultural Investments     | 104-109 |
|            | Projects What is a Project Project Cycle                     |         |
|            | Evaluation: Conception or identification                     |         |
|            | Formulation or preparation the of project                    |         |
|            | Appraisal or analysis  |         |
|            | Implementation   |         |
|            | Mentoring and Evaluation                                     |         |
| Chapter-19 | Compound Growth Rate Analysis                                | 110-113 |
|            | Compound Growth Rate   |         |
|            | Analysis of Growth   |         |
|            | Short Term Credit Need                                       |         |
|            | Medium Term Credit Need                                      |         |
|            | Long Term Credit Need  |         |
| Chapter-20 | Specification of the regression model for the                | 114-115 |
| C          | study  | 111122  |
|            | Regression model   |         |
|            | Selection of the variables and their definitions             |         |
|            | Farm income  |         |
|            | Non-farm income  |         |
|            | Amount borrowed  |         |
|            | Cropping intensity   |         |
|            | Repayment capacity   |         |
|            | Amount put to productive purposes                            |         |
|            | Amount put to productive purposes                            |         |
|            | Expenditures on family consumption                           |         |
|            | Farm expenses  |         |
|            | Total land holding (ha),                                     |         |
|            | Old debts  |         |
|            |  |         |

| Chapter-21  | Multicollinearity                           | 116-118 |
|-------------|---|---------|
|             | Autocorrelation                             | 110 110 |
|             | Estimation of elasticity                    |         |
| Chapter- 22 | Time series analysis of cyclical components | 119-122 |
|             | Moving Average Method                       |         |
|             | Linear Trend method trend Method            |         |
|             | Study questions                             |         |
| Chapter- 23 | Time series analysis of seasonal component  | 123-126 |
|             | Method of simple average                    |         |
|             | Ration to moving average method             |         |
|             | Study questions                             |         |
| Chapter- 24 | Time series analysis of Irregular component | 127-129 |
|             | Linear Trend method trend Approach          |         |
|             | Moving Average Method Approach              |         |
|             | Study questions                             |         |
| Chapter- 25 | SWOT analysis                               | 130-132 |
|             | Typical example                             |         |
| Chapter-26  | Agricultural finance facts                  | 133-137 |
| -           | A choose and Underline the correct answer   |         |
|             | Answer key                                  |         |
| Chapter-27  | Glossary                                    | 138-141 |