Contents

MODULE 1  INTRODUCTION  Defines business processes, AIS, and all foundational concepts. This module provides the knowledge building blocks to support the remaining chapters.

CHAPTER 1
Introduction to AIS  1

Overview of Business Processes  2
Overview of an Accounting Information System  4
Business Process Linkage Throughout the Supply Chain  6
IT Enablement of Business Processes  8

Basic Computer and IT Concepts  10
BASIC COMPUTER DATA STRUCTURES  10
FILE ACCESS AND PROCESSING MODES  11
DATA WAREHOUSE AND DATA MINING  12
NETWORKS AND THE INTERNET  13

Examples of IT Enablement  14
E-BUSINESS  15
 ELECTRONIC DATA INTERCHANGE  15
POINT OF SALE SYSTEM  15
AUTOMATED MATCHING  15
EVALUATED RECEIPT SETTLEMENT  16
E-PAYABLES AND ELECTRONIC INVOICE PRESENTMENT AND PAYMENT  16
ENTERPRISE RESOURCE PLANNING SYSTEMS  16

The Internal Control Structure of Organizations  17
ENTERPRISE RISK MANAGEMENT  18
A CODE OF ETHICS  20
COSO ACCOUNTING INTERNAL CONTROL STRUCTURE  20
IT CONTROLS  20
CORPORATE GOVERNANCE  20
IT GOVERNANCE  21

The Importance of Accounting Information Systems to Accountants  22
USERS OF THE AIS  22
DESIGN OR IMPLEMENTATION TEAM  22
AN AUDITOR OF THE AIS  22

The Relation of Ethics to Accounting Information Systems  22
Summary of Study Objectives  24
Key Terms  25
End of Chapter Material  26

CHAPTER 2  Foundational Concepts of the AIS  39

Interrelationships of Business Processes and the AIS  41
Types of Accounting Information Systems  43
MANUAL SYSTEMS  43
LEGACY SYSTEMS  45
MODERN, INTEGRATED SYSTEMS  47

Client-Server Computing  47
Cloud Computing  48

Accounting Software Market Segments  52
Input Methods Used in Business Processes  54
SOURCE DOCUMENTS AND KEYING  54
BAR CODES  55
Contents

POINT OF SALE SYSTEMS 56
ELECTRONIC DATA INTERCHANGE 56
E-BUSINESS AND E-COMMERCE 56

Processing Accounting Data 57
BATCH PROCESSING 57
ONLINE AND REAL-TIME PROCESSING 58

Outputs from the AIS Related to Business Processes 59
Documenting Processes and Systems 60
PROCESS MAPS 60
SYSTEM FLOWCHARTS 62
DOCUMENT FLOWCHARTS 64
DATA FLOW DIAGRAMS 65
ENTITY RELATIONSHIP DIAGRAMS 67

Ethical Considerations at the Foundation of Accounting Information Systems 69
Summary of Study Objectives 70
Key Terms 71
Appendix: Resources Events Agents (REA) in Accounting Information Systems 72
End of Chapter Material 74
CONCEPT CHECK 74
DISCUSSION QUESTIONS 76
BRIEF EXERCISES 77
PROBLEMS 78
CASES 79
CONTINUING CASE: ROBATELLI’S PIZZERIA 79
SOLUTIONS TO CONCEPT CHECK 80

MODULE 2  CONTROL ENVIRONMENT Describes the proper control environment to oversee and control processes.

CHAPTER 3  Fraud, Ethics, and Internal Control 83
Introduction to the Need for a Code of Ethics and Internal Controls 84
Accounting-Related Fraud 86
CATEGORIES OF ACCOUNTING-RELATED FRAUD 89
The Nature of Management Fraud 89
The Nature of Employee Fraud 91
The Nature of Customer Fraud 92
The Nature of Vendor Fraud 93

The Nature of Computer Fraud 93
INTERNAL SOURCES OF COMPUTER FRAUD 93
EXTERNAL SOURCES OF COMPUTER FRAUD 94

Policies to Assist in the Avoidance of Fraud and Errors 96
Maintenance of a Code of Ethics 96
Maintenance of Accounting Internal Controls 97
THE DETAILS OF THE COSO REPORT 99
MONITORING 107
REASONABLE ASSURANCE OF INTERNAL CONTROLS 108

Maintenance of Information Technology Controls 109
Summary of Study Objectives 111
Key Terms 112
Appendix A: Recent History of Internal Control Standards 113
Appendix B: Control Objectives for Information Technology (COBIT) 114

End of Chapter Material 115
CONCEPT CHECK 115
DISCUSSION QUESTIONS 117
BRIEF EXERCISES 118
PROBLEMS 119
CASES 121
CONTINUING CASE: ROBATELLI’S PIZZERIA 124
SOLUTIONS TO CONCEPT CHECK 124

CHAPTER 4  Internal Controls and Risks in IT Systems 127
An Overview of Internal Controls for IT Systems 128
General Controls for IT Systems 130
AUTHENTICATION OF USERS AND LIMITING UNAUTHORIZED USERS 130
HACKING AND OTHER NETWORK BREAK-INS 133
ORGANIZATIONAL STRUCTURE 136
PHYSICAL ENVIRONMENT AND SECURITY 137
BUSINESS CONTINUITY 139

General Controls from an AICPA Trust Services Principles Perspective 140
RISKS IN NOT LIMITING UNAUTHORIZED USERS 141
RISKS FROM HACKING OR OTHER NETWORK BREAK-INS 144
RISKS FROM ENVIRONMENTAL FACTORS 144
PHYSICAL ACCESS RISKS 145
BUSINESS CONTINUITY RISKS 145
The Critical Importance of IT Governance in an Organization 238

SDLC AS PART OF STRATEGIC MANAGEMENT 239
SDLC AS AN INTERNAL CONTROL 239

Ethical Considerations Related to IT Governance 240
ETHICAL CONSIDERATIONS FOR MANAGEMENT 240
ETHICAL CONSIDERATIONS FOR EMPLOYEES 241
ETHICAL CONSIDERATIONS FOR CONSULTANTS 242

Summary of Study Objectives 243
Key Terms 244
End of Chapter Material 245

CHAPTER 7 Auditing Information Technology-Based Processes 253

Introduction to Auditing IT Processes 254
Types of Audits and Auditors 254
Information Risk and IT-Enhanced Internal Control 256
Authoritative Literature Used in Auditing 257
Management Assertions and Audit Objectives 259
Phases of an IT Audit 261
Audit Planning 261
Use of Computers in Audits 264
Tests of Controls 265
General Controls 265
Application Controls 269
Tests of Transactions and Tests of Balances 274
Audit Completion/Reporting 276
Other Audit Considerations 277
Different IT Environments 277
Changes in a Client’s IT Environment 280
Sampling 281
Ethical Issues Related to Auditing 281
Summary of Study Objectives 285
Key Terms 286
End of Chapter Material 287

CHAPTER 8 Revenue and Cash Collection Processes and Controls 299

Introduction to Revenue Processes 300
Sales Processes 303
Risks and Controls in Sales Processes 308
Authorization of Transactions 309
Segregation of Duties 309
Adequate Records and Documents 309
Security of Assets and Documents 310
Independent Checks and Reconciliation 310
Cost-Benefit Considerations 310
Sales Return Processes 313
Risks and Controls in Sales Return Processes 313
Authorization of Transactions 313
Segregation of Duties 315
Adequate Records and Documents 315
Security of Assets and Documents 316
Independent Checks and Reconciliation 316
Cost-Benefit Considerations 316
Cash Collection Processes 318
Risks and Controls in the Cash Collection Processes 322
Authorization of Transactions 322
Segregation of Duties 322
Adequate Records and Documents 323
Security of Assets and Documents 323
Independent Checks and Reconciliation 323
Cost-Benefit Considerations 324
IT-Enabled Systems of Revenue and Cash Collection Processes 325
E-Business Systems and the Related
Risks and Controls 328

SECURITY AND CONFIDENTIALITY RISKS 330
PROCESSING INTEGRITY RISKS 330
AVAILABILITY RISKS 331

Electronic Data Interchange (EDI) Systems and
the Risks and Controls 331

Point of Sale (POS) Systems and
the Related Risks and Controls 335

Ethical Issues Related to Revenue Processes 337

Corporate Governance in Revenue Processes 339

Summary of Study Objectives 339

Key Terms 341

End of Chapter Material 341

CONCEPT CHECK 341
DISCUSSION QUESTIONS 344
BRIEF EXERCISES 345
PROBLEMS 346
CASES 352
CASH RECEIPTS 358
SALES 358
BANK DEPOSITS 359
CONTINUING CASE: ROBATELLI’S PIZZERIA 359
SOLUTIONS TO CONCEPT CHECK 360

CHAPTER 9
Expenditures Processes and
Controls—Purchases 363

Introduction to Expenditures Processes 364
Purchasing Processes 367
Risks and Controls in the Purchasing Process 373

AUTHORIZATION OF TRANSACTIONS 373
SEGREGATION OF DUTIES 373
ADEQUATE RECORDS AND DOCUMENTS 374
SECURITY OF ASSETS AND DOCUMENTS 374
INDEPENDENT CHECKS AND RECONCILIATION 374
COST-BENEFIT CONSIDERATIONS 375

Purchase Return Process 376

Risks and Controls in the Purchase
Return Processes 381

AUTHORIZATION OF TRANSACTIONS 381
SEGREGATION OF DUTIES 381
ADEQUATE RECORDS AND DOCUMENTS 381
SECURITY OF ASSETS AND DOCUMENTS 381
INDEPENDENT CHECKS AND RECONCILIATION 381
COST-BENEFIT CONSIDERATIONS 382

CHAPTER 10
Expenditures Processes and Controls—
Payroll and Fixed Assets 425

Introduction to Payroll and Fixed Asset Processes 426
Payroll Processes 429
## Contents

### Risks and Controls in Payroll Processes
- Authorization of Transactions 437
- Segregation of Duties 437
- Adequate Records and Documents 438
- Security of Assets and Documents 438
- Independent Checks and Reconciliation 439
- Cost-Benefit Considerations 440

### IT Systems of Payroll Processes
440

### Fixed Assets Processes
- Fixed Asset Acquisitions 442
- Fixed Assets Continuance 446
- Fixed Assets Disposals 447

### Risks and Controls in Fixed Assets Processes
- Authorization of Transactions 450
- Segregation of Duties 451
- Adequate Records and Documents 451
- Security of Assets and Documents 451
- Independent Checks and Reconciliation 451
- Cost-Benefit Considerations 453

### IT Systems of Fixed Assets Processes
453

### Ethical Issues Related to Payroll and Fixed Assets Processes
455

### Corporate Governance in Payroll and Fixed Assets Processes
457

### Summary of Study Objectives
459

### Key Terms
460

### End of Chapter Material
460

### Administrative Processes and Controls
509

### Conversion Processes and Controls
473

### Basic Features of Conversion Processes
474

### Components of the Logistics Function
- Planning 476
- Resource Management 479
- Operations 481

### Cost Accounting Reports Generated by Conversion Processes
485

### Risks and Controls in Conversion Processes
- Authorization of Transactions 486
- Segregation of Duties 486
- Adequate Records and Documents 487
- Security of Assets and Documents 487
- Independent Checks and Reconciliation 487
- Cost-Benefit Considerations 488

### IT Systems of Conversion Processes
489

### Ethical Issues Related to Conversion Processes
493

### Corporate Governance in Conversion Processes
494

### Summary of Study Objectives
494

### Key Terms
495

### End of Chapter Material
496

### Introduction to Administrative Processes
511

### Source of Capital Processes
513

### Investment Processes
514

### Risks and Controls in Capital and Investment Processes
516

### General Ledger Processes
516

### Risks and Controls in General Ledger Processes
520

### Reporting as an Output of the General Ledger Processes
526

### External Reporting 527
### Internal Reporting 527
Contents

Ethical Issues Related to Administrative Processes and Reporting 528
- Unethical Management Behavior in Capital Sources and Investing 529
- Internal Reporting of Ethical Issues 530

Corporate Governance in Administrative Processes and Reporting 531

Summary of Study Objectives 532
Key Terms 533

End of Chapter Material 534
- Concept Check 534
- Discussion Questions 535
- Brief Exercises 536
- Problems 537
- Case 538
- Continuing Case: Robatelli's Pizzeria 538
- Solutions to Concept Check 539

Module 4 IT Infrastructure to Enable Processes

Chapter 13 Data and Databases 541

The Need for Data Collection and Storage 542
Storing and Accessing Data 544
- Data Storage Terminology 544
- Data Storage Media 544
Data Processing Techniques 546
Databases 547
- The History of Databases 549
The Need for Normalized Data 551
- Trade-Offs in Database Storage 554
Use of a Data Warehouse to Analyze Data 554
- Build the Data Warehouse 555
- Identify the Data 555
- Standardize the Data 556
- Cleanse, or Scrub, the Data 556
- Upload the Data 556
Data Analysis Tools 556
- Data Mining 557
- OLAP 558
Distributed Data Processing 559
- DDP and DDB 560
Cloud-Based Databases 561
IT Controls for Data and Databases 562

Ethical Issues Related to Data Collection and Storage 563
- Ethical Responsibilities of the Company 564
- Ethical Responsibilities of Employees 566
- Ethical Responsibilities of Customers 566

Summary of Study Objectives 567
Key Terms 568

End of Chapter Material 569
- Concept Check 569
- Discussion Questions 571
- Brief Exercises 572
- Problems 573
- Cases 573
- Continuing Case: Robatelli's Pizzeria 575
- Solutions to Concept Check 575

Chapter 14 E-Commerce and E-Business 577

Introduction to E-Commerce and E-Business 578
The History of the Internet 579
The Physical Structure and Standards of the Internet 582
- The Network 582
- The Common Standards of the Internet 583
E-Commerce and Its Benefits 586
- Benefits and Disadvantages of E-Commerce for the Customer 587
- Benefits and Disadvantages of E-Commerce for the Business 588
- The Combination of E-Commerce and Traditional Commerce 589
Privacy Expectations in E-Commerce 590
E-Business and IT Enablement 592
- B2B: A Part of E-Business 594
E-Business Enablement Examples 596
Intranets and Extranets to Enable E-Business 598
Internal Controls for the Internet, Intranets, and Extranets 599
XML and XBRL as Tools to Enable E-Business 601
- XML in Internet EDI 601
- XBRL for Financial Statement Reporting 603
Ethical Issues Related to E-Business and E-Commerce 604