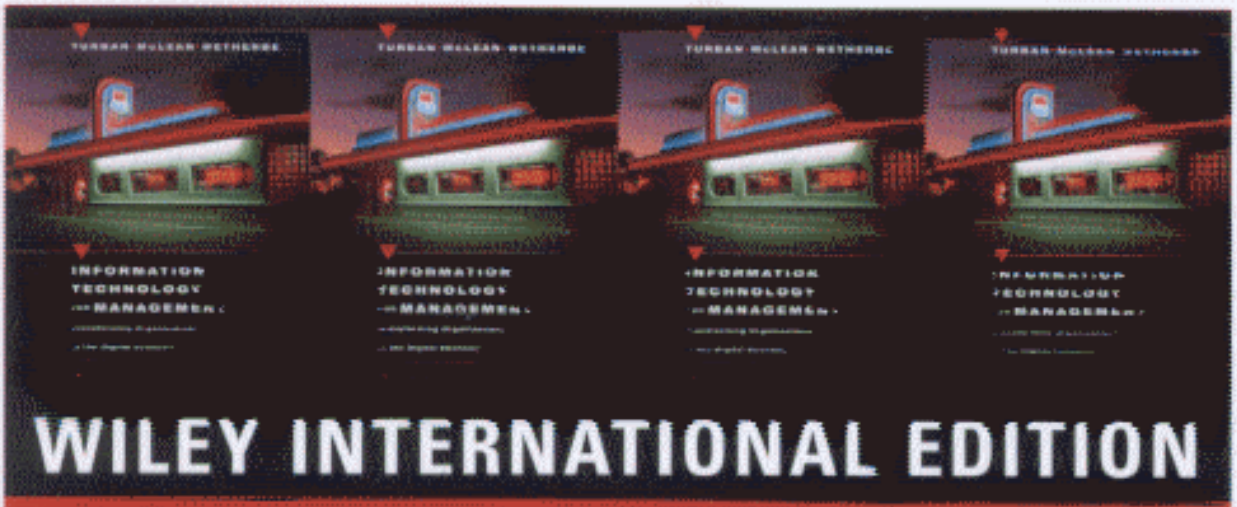

WILEY INTERNATIONAL EDITION

TURBAN • McLEAN • WETHERBE

INFORMATION TECHNOLOGY FOR MANAGEMENT

Transforming Organizations in the Digital Economy

4TH EDITION

RESTRICTED!

Not For Sale In The United States

PART I
IT in the Organization

1 Information Technology in the Digital Economy 1
Siemens AG Is Transforming Itself into an E-Business 2
1.1 Doing Business in the Digital Economy 3
1.2 Business Pressures, Organizational Responses, and IT Support 11
1.3 Information Systems Definitions and Examples 18
1.4 Information Technology Developments and Trends 24
1.5 Why Should You Learn About Information Technology? 32
1.6 Plan of the Book 33
Minicases: (1) Dartmouth College Goes Wireless / (2) Voice-Based 511 Traveler Information Line 38

Chapter 1 Appendix Ethics in Information Technology Management 42

2 Information Technologies: Concepts and Management 47
Building an E-Business at FedEx Corporation 48
2.1 Information Systems: Concepts and Definitions 50
2.2 Classification and Evolution of Information Systems 52
2.3 Transaction Processing versus Functional Information Systems 57
2.4 How IT Supports Various Types of Organizational Activities 59
2.5 How IT Supports Supply Chain and CRM Operations 62
2.6 Information Systems Infrastructure and Architecture 65
2.7 Web-Based Systems 71
2.8 New Computing Environments 74
2.9 Managing Information Resources 76
Minicases: (1) Maybelline / (2) JCPenney 82

Appendix 2A Build-to-Order Production 87

3 Strategic Information Systems for Competitive Advantage 89
Rosenbluth International: Competing in the Digital Economy 90
3.1 Strategic Advantage and Information Technology 92
3.2 Porter's Competitive Forces Model and Strategies 98
3.3 Porter's Value Chain Model 107
3.4 Interorganizational Strategic Information Systems 110
3.5 A Framework for Global Competition 111
3.6 Strategic Information Systems: Examples and Analysis 112
3.7 Implementing and Sustaining SIS 116
Minicases: (1) Cisco Systems / (2) Aeronautica Civil 120

PART II
The Web Revolution

4 Network Computing: Discovery, Communication, and Collaboration 125
National Semiconductor Corporation 126
4.1 Network Computing—An Overview 128
4.2 Discovery 132
4.3 Communication 141
4.4 Collaboration 144
4.5 Collaboration-Enabling Tools: From Workflow to Groupware 150
4.6 E-Learning, Distance Learning, and Telecommuting 156
4.7 Some Ethical and Integration Issues 160
Minicases: (1) General Motors (2) Cisco Systems 169

5 E-Business and E-Commerce 175
Hi-Life Corporation 176
5.1 Overview of E-Business and E-Commerce 177
5.2 EC Mechanisms: Electronic Auctions and Bartering 183
5.3 Business-to-Consumer Applications 185

5.4 Market Research and Online Advertising 192
5.5 B2B Applications 200
5.6 Intrabusiness and Business-to-Employees 204
5.7 E-Government and Consumer-to-Consumer EC 206
5.8 E-Commerce Support Services 208
5.9 Legal and Ethical Issues in E-Business 215
5.10 Failures and Strategies for Success 219
Minicases: (1) Freemarkets.com / (2) Restaurants.com 226

Appendix 5A EDI and Extranets 231

6 Mobile, Wireless, and Pervasive Computing Environments 236
NextBus 237
6.1 Mobile Computing and Commerce: Overview, Benefits, and Drivers 238
6.2 Mobile Computing Infrastructure 245
6.3 Mobile Applications in Financial Services 253
6.4 Mobile Shopping, Advertising, and Content-Providing 256
6.5 Mobile Intrabusiness and Enterprise Applications 259
6.6 Mobile B2B and Supply Chain Applications 265
6.7 Mobile Consumer and Personal Service Applications 265
6.8 Location-Based Commerce 269
6.9 Pervasive Computing 273
6.10 Inhibitors and Barriers of Mobile Computing 282
Minicases: (1) Hertz / (2) Washington Township Fire Department 290

PART III
Organizational Applications

7 Transaction Processing, Functional Applications, CRM, and Integration 295
Dartmouth-Hitchcock Medical Center 296
7.1 Functional Information Systems 298
7.2 Transaction Processing Information Systems 300
7.3 Managing Production/Operations and Logistics 306
7.4 Managing Marketing and Sales Systems 312
7.5 Managing the Accounting and Finance Systems 322
7.6 Managing Human Resources Systems 329
7.7 Customer Relationship Management (CRM) 335
7.8 Integrating Functional Information Systems 341
Minicases: (1) Dollar General / (2) QVC 349

8 Supply Chain Management and Enterprise Resource Planning 354
ChevronTexaco 354
8.1 Essentials of the Supply and Value Chains 356
8.2 Supply Chain Problems and Solutions 360
8.3 Computerized Systems: MRP, MRPII, SCM, and E-Integration 365
8.4 Enterprise Resource Planning (ERP) 369
8.5 E-Commerce and Supply Chains 377
8.6 Partner Relationship Management 385
8.7 Global Supply Chains 386
Minicases: (1) Quantum Corporation / (2) Green Mountain Coffee Roasters 392

9 IT Planning and Business Process Redesign 396
TruServe 397
9.1 IT Planning—A Critical Issue for Organizations 398
9.2 Strategic IT Planning 401
9.3 Information Requirements Analysis, Resource Allocation, Project Planning 408
9.4 Planning IT Architectures 411
9.5 Some Issues in IT Planning 415
9.6 Planning for Web-based Systems and E-Commerce 417
9.7 Business Process Redesign 420
9.8 The Role of IT in Business Process Redesign 423
9.9 Restructing Processes and Organizations 427
9.10 Organization Transformation and Change Management 433
Minicases: (1) Oregon's GIS Plan / (2) National City Bank 442

PART IV
Managerial and Decision Support Systems

10 Knowledge Management 448
Siemens AG 449
10.1 Introduction to Knowledge Management 451
10.2 Knowledge Management Initiatives 456

10.3 Approaches to Knowledge Management 458

10.4 Information Technology in Knowledge Management 460

10.5 Knowledge Management Systems Implementation 464

10.6 Roles of People in Knowledge Management 471

10.7 Ensuring Success of KM Efforts 474

Minicases: (1) DaimlerChrysler / (2) Chevron 484

11 Data Management: Warehousing, Analyzing, Mining, and Visualization 490

Harrah's Entertainment 491

11.1 Data Management: A Critical Success Factor 493

11.2 Data Warehousing 500

11.3 Information and Knowledge Discovery with Business Intelligence 505

11.4 Data Mining Concepts and applications 510

11.5 Data Visualization Technologies 514

11.6 Marketing Databases in Action 523

11.7 Web-Based Data Management Systems 526

Minicases: (1) Sears / (2) Dallas Area Rapid Transit 534

12 Management Decision Support and Intelligent Systems 541

Singapore and Malaysia Airlines 542

12.1 Managers and Decision Making 543

12.2 Decision Support Systems 550

12.3 Group Decision Support Systems 554

12.4 Enterprise and Executive Decision Support Systems 555

12.5 Intelligent Support Systems: The Basics 559

12.6 Expert Systems 563

12.7 Other Intelligent Systems 568

12.8 Web-Based Management Support Systems 574

12.9 Advanced and Special Decision Support Topics 576

Minicases: (1) A DSS Reshapes the Railway in the Netherlands / (2) Gate Assignment Display Systems 584

Appendix 12A Intelligent Software Agents (online)

PART V
Implementing and Managing IT

13 Information Technology Economics 588

State of Iowa 589

13.1 Financial and Economic Trends 590

13.2 Evaluating IT Investment: Benefits, Costs, and Issues 597

13.3 Methods for Evaluating and Justifying IT Investment 603

13.4 IT Economic Strategies: Chargeback and Outsourcing 611

13.5 Economics of Web-Based Systems and e-commerce 617

13.6 Other Economic Aspects of Information Technology 618

Minicases: (1) Intranets / (2) Kone Inc. 627

14 Building Information Systems 632

Utility Computing 633

14.1 The Concept of a Systems Development Life Cycle 634

14.2 Methods for Complex or Quickly Needed Systems 640

14.3 Component-Based Development and Web Services 647

14.4 Systems Developed Outside the IS Department 653

14.5 Building E-Business Applications 661

14.6 Some Important Systems Development Issues 665

Minicases: (1) "Do or Die" / (2) University of Nebraska 675

15 Managing Information Resources and Security 679

Cybercrime in the New Millennium 680

15.1 The IS Department and End Users 681

15.2 The CIO in Managing the IS Department 686

15.3 IS Vulnerability and Computer Crimes 687

15.4 Protecting Information Resources: From National to Organizational Efforts 698

15.5 Securing the Web, Intranets, and Wireless Networks 706

15.6 Business Continuity and Disaster Recovery Planning **712**

15.7 Implementing Security: Auditing and Risk Analysis **716**

Minicases: (1) Home Depot / (2) Managing Security **727**

16 Impacts of IT on Organizations, Individuals, and Society

Online at *www.wiley.com/college/turban*

MP3.com, Napster, and Intellectual Property Rights

16.1 Does IT Have Only Positive Effects?

16.2 Impacts of IT on Organizations

16.3 Impacts of IT on Individuals at Work

16.4 Societal Impacts

16.5 Virtual Communities

16.6 Concluding Thoughts

Minicases: (1) Australian Fishing Community / (2) American Stock Exchange

Technology Guides Online at *www.wiley.com/college/turban*

T1 Hardware

T1.1 What Is a Computer System?

T1.2 The Evolution of Computer Hardware

T1.3 Types of Computers

T1.4 The Microprocessor and Primary Storage

T1.5 Input/Output Devices

T2 Software

T2.1 Types of Software

T2.2 Application Software

T2.3 Systems Software

T2.4 Programming Languages

T2.5 Software Development and CASE Tools

T2.6 Software Issues and Trends

T3 Data and Databases

T3.1 File Management

T3.2 Databases and Database Management Systems

T3.3 Logical Data Organization

T3.4 Creating Databases

T3.5 Emerging Database Models

T3.6 Data Warehouses

T3.7 Physical Database Organization

T3.8 Database Management

T3.9 An Emerging Technology: IP-based Storage

T4 Telecommunications

T4.1 Telecommunications Concepts

T4.2 Communications Media (Channels)

T4.3 Network Systems: Protocols, Standards, Interfaces, and Topologies

T4.4 Network Architecture: Open Systems and Enterprise Networking

T4.5 Telecommunications Applications

T5 The Internet and the Web

T5.1 What Is the Internet?

T5.2 Basic Characteristics and Capabilities of the Internet

T5.3 Browsing and the World Wide Web

Glossary G-1

Photo Credits P-1

Name Index NI-1

Subject Index SI-1