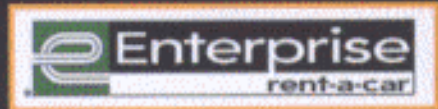


Third Edition

SERVICE MANAGEMENT

Operations, Strategy, and Information Technology

L.L.Bean



Golfsmith

James A. Fitzsimmons • Mona J. Fitzsimmons



McGRAW-HILL INTERNATIONAL EDITION
Management and Organization Series

CONTENTS

PART ONE

Understanding Services

1. THE ROLE OF SERVICES IN AN ECONOMY	3
Learning Objectives	3
Chapter Preview	4
Service Definitions	5
Economic Evolution	5
Stages of Economic Development	7
<i>Preindustrial Society</i>	7
<i>Industrial Society</i>	8
<i>Postindustrial Society</i>	8
Nature of the Service Sector	9
New Experience Economy	11
Role of the Service Manager	12
<i>Innovation</i>	12
<i>Social Trends</i>	14
<i>Management Challenges</i>	14
Summary	17
Service Benchmark: <i>Fortune</i> Adds Service Sector to Its “500” List of Corporations	17
Key Terms and Definitions	18
Topics for Discussion	18
Selected Bibliography	18
Endnotes	18
2. THE NATURE OF SERVICES	21
Learning Objectives	21
Chapter Preview	22
Service Classification	22
The Service Package	24

10. Distinctive Characteristics of Service Operations	25
<i>Customer Participation in the Service Process</i>	25
<i>Simultaneity</i>	27
<i>Perishability</i>	28
<i>Intangibility</i>	28
<i>Heterogeneity</i>	29
Classifying Services for Strategic Insights	29
<i>Nature of the Service Act</i>	30
<i>Relationship with Customers</i>	31
<i>Customization and Judgment</i>	32
<i>Nature of Demand and Supply</i>	33
<i>Method of Service Delivery</i>	34
An Open-Systems View of Services	34
Service Benchmark: To Compete Better, Look Far Afield	36
Summary	37
Key Terms and Definitions	37
Topics for Discussion	37
Case: Village Volvo	38
Case: Xpresso Lube	39
Selected Bibliography	41
Endnotes	41
3. SERVICE QUALITY	43
Learning Objectives	43
Chapter Preview	44
Defining Service Quality	44
<i>Dimensions of Service Quality</i>	44
<i>Gaps in Service Quality</i>	45
Measuring Service Quality	48
SERVQUAL	48
<i>Scope of Service Quality</i>	49
Quality Service by Design	52
<i>Incorporation of Quality in the Service Package</i>	52
<i>Taguchi Methods</i>	54
<i>Poka-Yoke (Failsafing)</i>	55
<i>Quality Function Deployment</i>	57
Achieving Service Quality	59
<i>Cost of Quality</i>	59
<i>Service Process Control</i>	61
<i>Statistical Process Control</i>	62
<i>Unconditional Service Guarantee</i>	66
Service Recovery	67
<i>Approaches to Service Recovery</i>	68
Stages in Quality Development	69
Summary	69
Key Terms and Definitions	69
Solved Problems	71
Topics for Discussion	72
Exercises	72
Service Benchmark: Service Winners of the Malcolm Baldrige National Quality Award	75
Case: Clean Sweep, Inc.	76
Case: The Complaint Letter	78

Selected Bibliography	80
Endnotes	82
4. SERVICE STRATEGY	83
Learning Objectives	83
Chapter Preview	83
The Strategic Service Concept	84
Understanding the Competitive Environment of Services	86
Competitive Service Strategies	87
<i>Overall Cost Leadership</i>	87
<i>Differentiation</i>	88
<i>Focus</i>	90
Winning Customers in the Marketplace	90
<i>Qualifiers</i>	92
<i>Service Winners</i>	92
<i>Service Losers</i>	92
The Competitive Role of Information in Services	92
<i>Creation of Barriers to Entry</i>	92
<i>Revenue Generation</i>	94
<i>Database Asset</i>	95
<i>Productivity Enhancement</i>	97
The Virtual Value Chain	97
Limits in the Use of Information	99
<i>Anticompetitive</i>	99
<i>Fairness</i>	99
<i>Invasion of Privacy</i>	99
<i>Data Security</i>	100
<i>Reliability</i>	100
Summary	100
Key Terms and Definitions	100
Topics for Discussion	101
Selected Bibliography	101
Service Benchmark: Central Market Shuns Conventional Wisdom and Big-Name Products	102
Case: America West Airlines	103
Case: The Best Little Cookie House Around	104
Endnotes	106

PART TWO

Designing the Service Enterprise

5. NEW SERVICE DEVELOPMENT AND PROCESS DESIGN	109
Learning Objectives	109
Chapter Preview	110
New Service Development	110
Technological Innovation in Services	111
<i>Challenges of Adopting New Technology in Services</i>	112
<i>Automation in Services</i>	113
<i>Managing the New Technology Adoption Process</i>	116
Service Blueprinting	118
Strategic Positioning through Process Structure	120

X* CONTENTS:

Taxonomy for Service Process Design	121
<i>Degree of Divergence</i>	122
<i>Object of the Service Process</i>	122
<i>Type of Customer Contact</i>	124
Generic Approaches to Service System Design	124
<i>Production-Line Approach</i>	125
<i>Customer as Coproducer</i>	126
<i>Customer Contact Approach</i>	128
<i>Information Empowerment</i>	129
Summary	133
Key Terms and Definitions	133
Topics for Discussion	133
Service Benchmark: PacBell's Experiment	134
Case: 100 Yen Sushi House	135
Case: Commuter Cleaning—A New Venture Proposal	137
Case: Golfsmith	139
Selected Bibliography	141
Endnotes	142
6. THE SUPPORTING FACILITY	143
<i>Learning Objectives</i>	143
Chapter Preview	144
Servicescapes	144
<i>Behaviors in Servicescapes</i>	145
<i>Environmental Dimensions of Servicescapes</i>	146
Facility Design	147
<i>Nature and Objectives of Service Organizations</i>	148
<i>Land Availability and Space Requirements</i>	148
<i>Flexibility</i>	149
<i>Aesthetic Factors</i>	149
<i>The Community and Environment</i>	150
Facility Layout	150
<i>Product Layout and the Line-Balancing Problem</i>	152
<i>Process Layout and the Relative Location Problem</i>	154
Process Flowcharting	157
Environmental Psychology and Orientation	159
Summary	160
Key Terms and Definitions	161
Solved Problems	161
Topics for Discussion	163
Exercises	163
Service Benchmark: Where, Oh Where Shall We Go?	166
Case: Health Maintenance Organization (A)	166
Case: Health Maintenance Organization (B)	167
Case: Esquire Department Store	168
Selected Bibliography	169
Endnotes	169
7. SERVICE FACILITY LOCATION	171
<i>Learning Objectives</i>	171
Chapter Preview	172
Location Considerations	172
<i>Geographic Representation</i>	173

<i>Number of Facilities</i>	174
<i>Optimization Criteria</i>	174
Estimation of Geographic Demand	176
<i>Define the Target Population</i>	176
<i>Select a Unit of Area</i>	176
<i>Estimate Geographic Demand</i>	176
<i>Map Geographic Demand</i>	177
Facility Location Techniques	177
<i>Single Facility</i>	178
<i>Locating a Retail Outlet</i>	182
<i>Multiple Facilities</i>	183
Site Considerations	186
Breaking the Rules	186
<i>Competitive Clustering</i>	186
<i>Saturation Marketing</i>	187
<i>Marketing Intermediaries</i>	187
<i>Substitution of Communication for Transportation</i>	188
<i>Impact of the Internet on Service Location</i>	188
Geographic Information System	189
Summary	189
Service Benchmark: Saturating Cities with Stores Can Pay	191
Key Terms and Definitions	193
Solved Problems	193
Topics for Discussion	195
Exercises	196
Case: Health Maintenance Organization (C)	198
Case: Athol Furniture, Inc.	199
Selected Bibliography	201
Endnotes	201
8. THE SERVICE ENCOUNTER	203
Learning Objectives	203
Chapter Preview	204
The Service Encounter Triad	204
<i>Encounter Dominated by the Service Organization</i>	205
<i>Contact Personnel-Dominated Encounter</i>	205
<i>Customer-Dominated Encounter</i>	206
The Service Organization	206
<i>Culture</i>	206
<i>Empowerment</i>	208
Contact Personnel	208
<i>Selection</i>	209
<i>Training</i>	210
The Customer	212
<i>Expectations and Attitudes</i>	212
<i>The Customer as Coproducer</i>	213
Summary of Service Encounters	213
Creating a Customer Service Orientation	213
Service Profit Chain	216
Service Benchmark: Miss Manners on Complaint Handling	219
Summary	220
Key Terms and Definitions	220
Topics for Discussion	220

Case: Amy's Ice Cream	221
Case: Enterprise Rent-A-Car	222
Selected Bibliography	225

CHAPTER 8 SUPPLEMENT

Work Measurement	227
<i>Time Study</i>	227
<i>Work Sampling</i>	230
<i>Sample Size</i>	232
<i>Work Methods Charts</i>	233
Solved Problems	235
Exercises	235
Case: County General Hospital	237
Endnotes	238

9. INTERNET SERVICE 239

Learning Objectives	239
Chapter Preview	240
Internet Services	240
<i>Coming of Age for the Internet and Websites</i>	240
<i>Internet Business Models</i>	242
<i>Electronic and Traditional Services</i>	242
<i>Service Product Dimensions</i>	242
<i>Service Process Dimensions</i>	244
Design and Delivery of Electronic Services	244
<i>Electronic Service Product Structure</i>	244
<i>Electronic Service Process Structure</i>	246
Electronic Service Strategy and the Product-Process Matrix	250
Summary	251
Key Terms and Definitions	251
Topics for Discussion	251
Service Benchmark: Microsoft, Ford Drive Web Deal	252
Case: Amazon.com	253
Case: TheGift.com	255
Selected Bibliography	257
Endnotes	257

PART THREE

Managing Service Operations

10. FORECASTING DEMAND FOR SERVICES	261
Learning Objectives	261
Chapter Preview	261
Subjective Models	262
<i>Delphi Method</i>	262
<i>Cross-Impact Analysis</i>	264
<i>Historical Analogy</i>	264
Causal Models	264
<i>Regression Models</i>	265
<i>Econometric Models</i>	267
Time Series Models	267
<i>N-Period Moving Average</i>	267

<i>Simple Exponential Smoothing</i>	268
<i>Relationship between α and N</i>	270
<i>Forecast Error</i>	271
<i>Exponential Smoothing with Trend Adjustment</i>	272
<i>Exponential Smoothing with Seasonal Adjustment</i>	274
<i>Exponential Smoothing with Trend and Seasonal Adjustments</i>	276
<i>Summary of Exponential Smoothing</i>	276
Summary	277
Key Terms and Definitions	278
Service Benchmark: L. L. Bean Improves Call-Center Forecasting	279
Solved Problems	282
Topics for Discussion	284
Exercises	284
Case: Oak Hollow Medical Evaluation Center	285
Case: Gnomial Functions, Inc.	286
Selected Bibliography	288
Endnotes	288
11. MANAGING WAITING LINES	289
Learning Objectives	289
Chapter Preview	291
Queuing Systems	292
The Inevitability of Waiting	292
The Psychology of Waiting	294
<i>That Old Empty Feeling</i>	294
<i>A Foot in the Door</i>	295
<i>The Light at the End of the Tunnel</i>	295
<i>Excuse Me, but I Was Next</i>	295
<i>They Also Serve, Who Sit and Wait</i>	296
The Economics of Waiting	296
Essential Features of Queuing Systems	297
<i>Calling Population</i>	298
<i>Arrival Process</i>	298
<i>Queue Configuration</i>	303
<i>Queue Discipline</i>	305
<i>Service Process</i>	306
Summary	308
Service Benchmark: Conquering Those Killer Queues	309
Key Terms and Definitions	310
Topics for Discussion	310
Case: Thrifty Car Rental	311
Case: Eye'll Be Seeing You	312
CHAPTER 11 SUPPLEMENT	
Computer Simulation	314
<i>Process of Systems Simulation</i>	315
<i>ServiceModel Simulation Software</i>	321
Solved Problems	324
Exercises	327
Case: Pronto Pizza	330
Case: Renaissance Clinic (A)	330
Selected Bibliography	331
Endnotes	332

12. QUEUING MODELS AND CAPACITY PLANNING	333
Learning Objectives	333
Chapter Preview	334
Capacity Planning	335
<i>Strategic Role of Capacity Decisions</i>	335
Analytical Queuing Models	336
<i>Standard M/M/1 Model</i>	338
<i>Finite-Queue M/M/1 Model</i>	340
<i>M/G/1 Model</i>	341
<i>Standard M/M/c Model</i>	342
<i>Finite-Queue M/M/c Model</i>	345
<i>General Self-Service M/G/∞ Model</i>	345
General Relationships between System Characteristics	346
Capacity Planning Criteria	347
<i>Average Customer Waiting Time</i>	348
<i>Probability of Excessive Waiting</i>	349
<i>Minimizing the Sum of Customer Waiting Costs and Service Costs</i>	350
<i>Probability of Sales Lost Because of Inadequate Waiting Area</i>	351
<i>Requirement That Expected Profit on Last Unit of Capacity</i>	
<i>Should Just Exceed Expected Loss</i>	352
<i>Service Benchmark: Simulation Modeling for Process Reengineering in the Telecommunications Industry</i>	354
Summary	357
Key Terms and Definitions	357
Solved Problems	357
Topics for Discussion	359
Exercises	359
Case: Houston Port Authority	362
Case: Freedom Express	362
Case: Renaissance Clinic (B)	363
Selected Bibliography	364
Endnotes	364
13. MANAGING CAPACITY AND DEMAND	365
Learning Objectives	365
Chapter Preview	366
Strategies for Managing Demand	366
<i>Partitioning Demand</i>	367
<i>Offering Price Incentives</i>	368
<i>Promoting Off-Peak Demand</i>	369
<i>Developing Complementary Services</i>	370
<i>Using Reservation Systems and Handling the Overbooking Problem</i>	370
Strategies for Managing Supply	373
<i>Using Daily Workshift Scheduling</i>	373
<i>Using Weekly Workshift Scheduling with Days-Off Constraint</i>	375
<i>Increasing Customer Participation</i>	377
<i>Creating Adjustable Capacity</i>	378
<i>Sharing Capacity</i>	378
<i>Cross-Training Employees</i>	378
<i>Using Part-Time Employees</i>	379
<i>Scheduling Part-Time Tellers at a Drive-In Bank</i>	379
Yield Management	380
<i>Yield Management Applications</i>	384
Summary	386

Key Terms and Definitions	386
Service Benchmark: Yield Management at American Airlines	387
Solved Problems	388
Topics for Discussion	390
Exercises	391
Case: River City National Bank	393
Case: Gateway International Airport	395
Case: The Yield Management Analyst	396
Selected Bibliography	400
Endnotes	401
14. MANAGING FACILITATING GOODS	403
Learning Objectives	403
Chapter Preview	405
Inventory Theory	405
<i>Role of Inventory in Services</i>	405
<i>Characteristics of Inventory Systems</i>	407
<i>Relevant Costs of an Inventory System</i>	408
Order Quantity Models	408
<i>Economic Order Quantity</i>	408
<i>Inventory Model with Quantity Discounts</i>	412
<i>Inventory Model with Planned Shortages</i>	415
Inventory Management under Uncertainty	417
Inventory Control Systems	419
<i>Continuous Review System</i>	419
<i>Periodic Review System</i>	420
<i>The ABCs of Inventory Control</i>	422
Single-Period Model for Perishable Goods	423
<i>Expected Value Analysis</i>	424
<i>Marginal Analysis</i>	425
Retail Discounting Model	426
Summary	427
Service Benchmark: Where Parts Are the Whole	428
Key Terms and Definitions	428
Solved Problems	429
Topics for Discussion	430
Exercises	431
Case: Elysian Cycles	436
Selected Bibliography	437
Endnotes	437
15. SERVICE SUPPLY CHAIN MANAGEMENT	439
Learning Objectives	439
Chapter Preview	440
Supply Chain Management	440
<i>Network Model</i>	440
<i>Managing Uncertainty</i>	441
<i>Supply Chain Strategic Planning</i>	441
Service Chain Management	444
<i>Conversion</i>	444
<i>Distribution</i>	444
<i>Knowledge Management</i>	445
<i>Mobile Workers</i>	445
Sources of Value in Service Chain Management	446

<i>Bidirectional Optimization</i>	446
<i>Management of Productive Capacity</i>	446
<i>Management of Perishability</i>	447
Purchasing Business Services	448
<i>Classification of Business Services</i>	449
Implications for Purchase Decisions	450
<i>Facility Support Service (Property/Low Importance)</i>	450
<i>Equipment Support Service (Property/High Importance)</i>	451
<i>Employee Support Service (People/Low Importance)</i>	452
<i>Employee Development (People/High Importance)</i>	452
<i>Facilitator Service (Process/Low Importance)</i>	452
<i>Professional Service (Process/High Importance)</i>	452
Service Benchmark: Frito-Lay Puts Hand-Held Computers in the Field	453
Summary	454
Key Terms and Definitions	454
Topics for Discussion	454
Case: Peapod—Smart Shopping for Busy People	455

CHAPTER 15 SUPPLEMENT

Vehicle Routing	458
<i>Using the C-W Algorithm Unconstrained</i>	459
<i>Using the C-W Algorithm with Constraints</i>	463
<i>Use of a "Minimal Technology Routing System"</i>	465
Solved Problems	466
Exercises	468
Case: The Daley Monthly Car Pool	471
Case: Airport Services, Inc.	471
Selected Bibliography	472
Endnotes	472

16. MANAGING SERVICE PROJECTS 473

Learning Objectives	473
Chapter Preview	473
The Nature of Project Management	474
<i>Characteristics of Projects</i>	474
<i>Project Management Process</i>	474
<i>Selecting the Project Manager</i>	475
<i>Building the Project Team</i>	475
<i>Principles of Effective Project Management</i>	476
Techniques for Project Management	477
<i>Gantt Project Charts</i>	477
<i>A Critique of Gantt Charts</i>	477
<i>Constructing a Project Network</i>	478
<i>Critical Path Method</i>	480
<i>Microsoft Project for Windows Analysis</i>	484
Resource Constraints	484
Activity Crashing	487
Incorporating Uncertainty in Activity Times	492
<i>Estimating Activity Duration Distributions</i>	492
<i>Project Completion Time Distribution</i>	493
<i>A Critique of the Project Completion Time Analysis</i>	494
Problems with Implementing Critical Path Analysis	496
Monitoring Projects	497

<i>Earned Value Chart</i>	497
<i>Project Termination</i>	498
<i>Project History Report</i>	499
Summary	499
Key Terms and Definitions	499
Service Benchmark: Project Management Software in Use	500
Solved Problems	501
Topics for Discussion	503
Exercises	503
Case: Info-Systems, Inc.	508
Case: Whittier County Hospital	509
Selected Bibliography	511
Endnotes	511
17. LINEAR PROGRAMMING APPLICATIONS IN SERVICES	513
Learning Objectives	513
Chapter Preview	513
Constrained Optimization Models	514
Formulating Linear Programming Models	516
<i>Diet Problem</i>	516
<i>Shift-Scheduling Problem</i>	518
<i>Workforce-Planning Problem</i>	519
<i>Transportation Problem</i>	521
Optimal Solutions and Computer Analysis	522
<i>Graphical Solution of Linear Programming Models</i>	523
<i>Linear Programming Model in Standard Form</i>	524
<i>Computer Analysis and Interpretation</i>	526
Sensitivity Analysis	528
<i>Objective-Function Coefficient Ranges</i>	528
<i>Right-Hand-Side Ranging</i>	529
Goal Programming	530
Service Benchmark: An Analysis of Alternative Locations and Service Areas of American Red Cross Blood Facilities	534
Summary	537
Key Terms and Definitions	537
Solved Problems	537
Topics for Discussion	538
Exercises	540
Case: Munich Delicatessen	548
Case: Sequoia Airlines	549
Selected Bibliography	550
Endnote	550

PART FOUR

Toward World-Class Service

18. PRODUCTIVITY AND QUALITY IMPROVEMENT	553
Learning Objectives	553
Chapter Preview	553
Customer Value Equation	554
<i>Results Produced for the Customer</i>	554
<i>Process Quality</i>	554

ix CONTENTS

<i>Price to the Customer</i>	554
<i>Cost of Acquiring the Service</i>	555
Stages in Service Firm Competitiveness	555
<i>Available for Service</i>	555
<i>Journeyman</i>	555
<i>Distinctive Competence Achieved</i>	557
<i>World-Class Service Delivery</i>	557
Making Continual Improvement a Competitive Strategy	557
<i>Inventory and Waiting Line Analogy</i>	558
<i>Continual Improvement as Part of the Service Organization Culture</i>	560
<i>Management Implications</i>	561
Walk-through Audit	562
<i>Designing a Walk-through Audit</i>	563
<i>Implications for Management</i>	565
The Walk-through Audit as a Diagnostic Instrument	565
Quality and Productivity Improvement Process	567
<i>Foundations of Continuous Improvement</i>	567
<i>Plan-Do-Check-Act (PDCA) Cycle</i>	567
<i>Problem Solving</i>	568
Quality Tools for Analysis and Problem Solving	568
<i>Check Sheet</i>	568
<i>Run Chart</i>	568
<i>Histogram</i>	569
<i>Pareto Chart</i>	570
<i>Flowchart</i>	571
<i>Cause-and-Effect Diagram</i>	571
<i>Scatter Diagram</i>	572
<i>Control Chart</i>	573
Programs for Organizational Quality Improvement	573
<i>Personnel Programs for Quality Assurance</i>	573
<i>Quality-Improvement Program to Achieve Zero Defects</i>	576
<i>Deming's 14-Point Program</i>	577
<i>Malcolm Baldrige National Quality Award</i>	578
<i>ISO 9000</i>	578
<i>Benchmarking</i>	580
Service Benchmark: Shoppers Act as Their Own Cashiers at Some Stores	581
Summary	582
Key Terms and Definitions	582
Topics for Discussion	582
Case: The Museum of Art and Design	583
Case: Mega Bytes Restaurant	585
CHAPTER 18 SUPPLEMENT	
Data Envelopment Analysis (DEA)	589
<i>Measuring Service Productivity</i>	590
<i>The DEA Model</i>	590
<i>DEA and Strategic Planning</i>	596
Exercises	597
Case: Mid-Atlantic Bus Lines	597
Selected Bibliography	598
Endnotes	599

19. GROWTH AND EXPANSION	601
Learning Objectives	601

Chapter Preview	602
Growth and Expansion Strategies	602
<i>Focused Service</i>	602
<i>Focused Network</i>	603
<i>Clustered Service</i>	604
<i>Diversified Network</i>	604
Franchising	605
<i>The Nature of Franchising</i>	605
<i>Benefits to the Franchisee</i>	605
<i>Issues for the Franchiser</i>	607
Multinational Development	608
<i>The Nature of the Borderless World</i>	608
<i>Considerations in Planning Multinational Operations</i>	610
Global Service Strategies	611
<i>Multicountry Expansion</i>	612
<i>Importing Customers</i>	613
<i>Following Your Customers</i>	613
<i>Service Unbundling</i>	614
<i>Beating the Clock</i>	615
Service Benchmark: Big Macs to Go: America's Contribution to Asian Culture: How to Wait in Line and Eat Standing Up	616
Summary	617
Key Terms and Definitions	617
Topics for Discussion	617
Case: Goodwill Industries International, Inc.	618
Case: Federal Express: Tiger International Acquisition	621
Selected Bibliography	625
Endnotes	625
Appendix A Areas of a Standard Normal Distribution	627
Appendix B Uniformly Distributed Random Numbers [0,1]	628
Appendix C Values of L_q for the M/M/c Queuing Model	629
Appendix D Equations for Selected Queuing Models	631
Indexes	635