## INDEX

### A
- ABC inventory classification, 208–209
- Accenture, 126
- acceptable quality level (AQL), 219
- acceptance sampling, 228–229
- activity-based costing, 309
- adversarial negotiators, 262
- adversarial tactics
  - anchoring, 262
  - concessions, 262–263
  - manipulating commitments, 263–264
  - withholding information, 263
- Amazon, 9, 249
- anchoring effect, 262
- *anima sana* (ASICS), 50–52, 55, 56
- Asia-Pacific Economic Cooperation Forum (APEC), 285
- assemble-to-order strategy, 34
- assignable variation, 229
- auto industry, 123
- automated storage and retrieval systems (ASRS), 146

### B
- Barlean’s Organic Oils, 42
- batch processes, 107
- bill of materials (BOM), 207
- BMW, 283–284
- boundary-spanning nature
  - cross-enterprise integration, 11–12
  - intracompany integration, 10–11
- brainware, 169
- break-bulk, 151
- break-even point, 102
- break-even quantity, 102–104
- “bricks-and-mortar” bookstores, 89
- buffer stock, 201
- buffer uncertainty, 192
- bullwhip effect, 7
- business contexts, 304
- business logistics, 141
- business process, 51–53
- business strategy, 28
- business-to-business (B2B), 14, 18
- business-to-consumer (B2C), 14, 18

### C
- carbon fiber auto parts, 313
- carbon footprint, 307
- careers, SCM, 23
- carrying cost, 194
- causal forecasting models, 168
  - linear regression, 175–177
  - measuring forecast accuracy, 178–180
  - multiple regression, 178
- cause-and-effect diagrams, 225
- cellular layouts, 110
- checklists, 227
- Cisco, 281
- Coca-cola, 61, 84–85, 256, 310
- co-creation, 123
- collaborative forecasting
  - CPFR, 180–181
  - S & OP process, 181–183
  - Collaborative Planning, Forecasting, and Replenishment (CPFR), 180–181
- commercial sourcing, 121–122
- commodity swapping, 260
- common/random variation, 229
- competitive priority, 39
- competitive supply chain
  - relationship management, 15
  - reliability, 14–15
  - responsiveness, 14
- component parts, 190
- consumer sourcing, 121–122
- Container Security Initiative (CSI), 21
- continuous processes, 107
- continuous review system, 196
- contractual, 248
- control charts, 227
- core competencies, 16
- cost-oriented environmental management, 301
- crime forecasting, 161
- crisis-oriented environmental management, 301
- criticality, 129, 247–249
- cross-docking, 151
- cross-enterprise integration, 11–12
- cultural, 273
- cultural challenges
  - Coca Cola’s China branding challenge, 278
cultural challenges (contd.)
  high versus low context cultures, 279–280
  individualism versus collectivism, 279
  masculinity versus femininity, 279
  small versus large power distance, 279
  weak versus strong uncertainty avoidance, 279

customer-driven supply chains
  CRM software, 79–80
  customized strategy, 79
  end consumer, 76
  micro-marketing/one-to-one marketing, 79
  niche strategy, 79
  organizational end user, 77
  standardized strategy, 78
  supplier–customer relationship, 77–78

customer-related payoffs, 297

customer relationship management (CRM), 79–80
  customer service, 81–82
  customers, SCM, 4
  customized strategy, 79

Customers-Trade Partnership Against Terrorism (C-TPAT), 21

D

data conflicts, 257
  degree of product standardization, 105

Dell Computer Corporation, 6, 13–14, 35, 40, 85, 205

Delphi method, 167

demand management, 160

demand planning
  CPFR, 180–181
  S & OP process, 181–183

demand uncertainty, 126–128

demographic, 273

dependency risk, 37

dependent demand, 207

descriptive statistics, 228

design capacity, 57

design for manufacture (DFM), 104

designing supply chain networks, 51
  segmented structures, 62–63
  supply chain structure and management, 60–62

design phase, 253

design standard, 301

digital supply chain, 19

direct channel, 85

dispute resolution
  arbitration, 258–259
  litigation, 258
  mediation, 259

negotiation, 259
  adversarial tactics, 262–264
  distributive opportunities, 261
  integrative opportunities, 261
  leverage, 260–261
  “position” versus “interest,” 261

problem-solving tactics, 264–265

styles, 262

distribution strategy, 35–36

distributive opportunities, 261

dollar value, 194

E

early supplier involvement (ESI), 101

E-Auction Development Program (EDP), 135

ecological footprint, 307

economic environmental factor, 273

economic order quantity (EOQ), 196, 198–200, 210

economics production quantity (EPQ), 202–204

economies of distance, 147, 148

economies of scale, 147

effective capacity, 57

electronic auctions (e-auctions), 130–132

end consumer, 76

enterprise resource planning (ERP), 17, 208
  configuration, 65–66
  implementation, 66–67
  modules, 65

environmental risks, 312

environmental sustainability, 297–299

equipment technology, 282

event logistics, 141

evolving supply process, 126

executive opinion, 166

F

facility layout
  cellular layouts, 110
  fixed position layout, 109

  planning, 108–109
  process layout, 109–110
  product layout see product layout

facility location, 147

factor rating, 152

fair price, 124

FedEx, 40–41, 132

fibria celulose, 298

financial impact, 122

financial payoffs, 297

finished goods, 190

fishbone diagrams, 225

fixed position layout, 109

food mile, 308

Ford Taurus, 101

forecasting
  causal models
    linear regression, 175–177
    measuring forecast accuracy, 178–180

    multiple regression, 178

  CPFR, 180–181

  method selection, factors in, 164

  organization impact, 161–162
**Index**

*versus* planning, 159–161
principles, 163
qualitative forecasting methods, 166–168
quantitative methods, 168
SCM impact, 162
S & OP, 181–183
steps in, 163
time series forecasting models
  exponential smoothing, 171–172
  mean, 169–170
  moving averages, 170–171
  seasonality adjustment, 174–175
  trend adjusted exponential smoothing, 172–173
forecasting decisions in conflicts, 161
full cost accounting, 309
functional products, 126
fuzzy logic, 311

**G**
Gap Inc., 73
General Agreement on Tariffs and Trade (GATT), 285
general electric (GE), 218
global positioning systems (GPS), 17–18, 221
global supply chain management
  culture, 276
  global environment, 272–273
  hidden costs, 282–283
  information technology, 281–282
  infrastructure, 275
  labor, 271–272, 280
  market and competition, 275
market challenges
  cultural challenges, 277–280
  global consumer, 276
  global *versus* local marketing, 276–277
non-cost considerations, 283
opportunities and barriers, 274–275
political and economic factors
  exchange rate fluctuations, 284–285
  non-tariff barriers, 285
  regional trade agreements, 285
politics and economy, 276
suppliers, 281
technology, 276
transportation, 272, 280
Wal-Mart, 273–274
warehousing, 271
Goldcorp Inc., 22
good works ethic, 302
Great Pacific Garbage Patch, 296

**H**
health forecasting, 161
hedge inventory, 193
Hewlett Packard (HP), 7
histograms, 227
holding cost, 194
Honda, 100
human and financial resources, 304

**I**
IBM, 127
import quotas, 286
independent demand, 207
indirect channel, 85
information asymmetry, 263
information impact, 122
information sharing, SCM, 6
information technology (IT), 17–18, 51
innovative products, 126
integrative opportunities, 261
Intel Corporation, 208, 229
intelligent assembly robots, 19
intensive distribution, 86
interest conflict, 257
intermittent process, 105–107
internal sustainability actions, 305
International Monetary Fund (IMF), 272
Internet of Things (IoT), 18
intra-organizational integration, 10–11
inventory control, 146–147
inventory management
  anticipation inventory, 193
  cycle stock, 193
fixed-order quantity system
  EOQ, 198–200
  EPQ, 202–204
  *versus* fixed-time period systems, 197–198
order quantity (Q), 195–196
reorder point (ROP), 195–196, 201
safety stock, 193, 201–202
fixed-time period system
  computing target inventory, 206–207
  *versus* fixed-order quantity, 197–198
inventory position (IP), 196, 197
target inventory *R*, 196, 197
holding cost, 194
independent *versus* dependent demand, 207–208
inventory policy, 191
managing supply chain inventory
  ABC inventory classification, 208–209
  measuring inventory performance, 210–211
  practical considerations, EOQ, 210
  VMI, 211
manufacturing and service organizations, 190
medical tools, 190
MRO, 193
ordering cost, 194
pipeline inventory, 193
reasons for carrying
  balance supply and demand, 192
  buffer uncertainty, 192
inventory management (contd.)
  economic purchase orders, 192–193
  maintain independence of operations, 192
  protect against lead time demand, 191–192
  shortage costs, 194
inventory policy, 191
inventory turnover, 132–133

J
  jidoka, 223
  John Deere & Company, 195
  just-in-time (JIT), 142, 219

K
  kaizen, 218
  Kaizen Blitz, 218
  kanban, 221
  keiretsu supplier-partnering model, 265, 266
  Kozmo.com, 88
  KUKA Robotics Corp., 115

L
  labor, 271–272
  lean six sigma supply chain
    developing, 238–239
    impact on supply chain activities
      logistics, 239–240
      operations, 239
      suppliers, 239
  lean systems
    elements of lean, 219
    Lean Six Sigma, 216
    lean tools in the popular press, 227–228
    philosophy
      broad view, 217
      continuous improvement, 218
      eliminating waste, 217
      flexibility, 218
      simplicity, 217–218
      visibility, 218
    production
      pull system, 220
      small lot production, 222
      uniform plant loading, 222–223
      visual signals, 221–222
    respect for people
      role of management, 223
      role of suppliers, 224
      role of workers, 223
  SQC see statistical quality control (SQC)
  TQM see total quality management (TQM)
  U.S. Army, 219–220
  less-than-truck-load (LTL) shipment, 147
  LG Electronics, 54
  life-cycle assessment (LCA), 307
  life-cycle costing, 309
  Li & Fung, 38, 181
  linear regression, 175–177
  line processes, 107
  local content requirements, 286
  local marketing, 277
  logistics, 10
    evolution of, 141
    function, 139–140
  organization impact
    finance, 143
    marketing, 142
    operations, 141–142
    packaging, 143
    reverse logistics, 144–145
  supply chain impact, 143, 144
  task logistics
    facility location, 147
    inventory control, 146–147
    material handling, 146
    order fulfillment, 147
    packaging, 146
    storage, 146
    transportation see transportation
  third-party logistics providers, 153
  warehousing
    cross-docking, 151
    facility location, 151–152
    in supply chain, 150
  loss of control, 37
  lumpy demand (POQ), 210

M
  maintenance, repair, and operating items
    (MRO), 193
  make-to-order strategy, 34
  make-to-stock strategy, 33
  management phase, 253
  manufacturing technology, 282
  marketing, 10
    channel of distribution
      design channel structures, 86
      direct/indirect, 85
      e-commerce impact, 88–89
      versus logistics channel, 86–88
      omni-channel, 89–90
  customer-driven supply chains
    CRM software, 79–80
    customized strategy, 79
    end consumer, 76
    micro-marketing/one-to-one marketing, 79
    niche strategy, 79
    organizational end user, 77
    standardized strategy, 78
  delivering value to customers
    customer service, 81–82
global customer service issues, 84
measuring customer service, 83–84
supply chain impact, 82–83
VOC, 80–81
evolution, 73–74
function, 72–73
organization impact, 74–75
supply chain impact, 76
market research, 167
market segmentation, 73
mass marketing, 73
material handling, 146
material requirements planning (MRP), 207
Mazzi’s versus Totino’s pizza, 110
micro-marketing, 79
military logistics, 141
minimalist ethic, 302
multiple regression, 178

N
National Oceanic and Atmospheric Administration (NOAA), 168–169
niche strategy, 79
norm of reciprocity, 262
Northeast passage, 149

O
Oasis, 90
off-shoring, 128
omni-channel, 89–90
one-to-one marketing, 79
open auction, 131
open-source hardware, 19
operational impact, 122
operational payoffs, 297
operations, 10
operations management (OM)
decisions, 96–97
evolution of, 97–98
facility layout
cellular layouts, 110
fixed position layout, 109
planning, 108–109
process layout, 109–110
product layout, 110–114
function, 95–96
manufacturing and service organizations, 97
organization impact, 98
process automation
advantages, 114
disadvantages, 115
in services, 115–116
process design
definition, 105
intermittent process, 105–107
repetitive process, 106, 107
product design
break-even analysis, 102–104
concurrent engineering, 105
definition, 99
design of services, 100
DFM, 104
preliminary design and testing, 101
product life cycle, 104–105
remanufacturing, 105
reverse engineering, 101
screening stage, 101
operations strategy, 33–35
order fulfillment, 147
ordering cost, 194
order qualifiers, 43
order winners, 43
organizational end user, 77
organizational payoffs, 297
outsourcing, 60
outsourcing analytics, 126

P
packaging, 146
Pareto analysis, 227
Pareto’s law, 209
p-chart, 235
PepsiCo, 75
percentage of item cost, 194
performance standard, 301
periodic order quantity (POQ), 210
Periodic Review System, 197
physical distribution, 141
physical element of the service, 100
pipeline transportation, 149
place, marketing decisions, 76
place utility, 147
planning, 108–109, 159
political, environmental factor, 273
political forecasting, 161
political risks, 312
postponement, 127
predictive analytics, 165–166
price, 76
proactive sustainability actions, 305
problem-solving negotiators, 262
process capability, 229–233
process layout, 109–110
Proctor & Gamble (P&G), 7, 8, 77, 251–252
producers, SCM, 4
product, 76
production rate model, 202
product layout
disadvantages, 110
flow through, 110
line balancing, 111
assign tasks to workstations, 113–114
product layout (contd.)
- compute efficiency, 114
- cycle time/takt time, 111–112
- precedence diagram of pizza assembly, 112
- precedence relationships for pizza assembly, 111
- theoretical minimum number of stations, 112–113
product life cycle, 104–105
product positioning strategy, 33
product postponement, 277
product specifications, 230
product traceability, 41
product volume, 105
professional organizations, SCM, 23
project processes, 107
promotion, 76
psychological benefits, 100
pull production system, 219
purchasing, 120

Q
- Q-model, 196
- qualitative forecasting methods, 166–168
- quality circle, 223
- quality function deployment (QFD), 80–81
- quantitative forecasting methods, 168

R
- radio frequency identification (RFID), 18, 41
- rapid manufacturing (RM), 108
- raw materials, 190
- reactive sustainability actions, 305
- reasonable care ethic, 302
- reciprocal interdependence, 254
- regional trade agreements, 284
- rejection-then-recede, 263
- relational criticality, 248
- relational marketing, 74
- relationship conflicts, 257
- relationship view, 53
- reorder point (ROP), 195–196, 201
- repetitive process, 106, 107
- request for proposal (RFP), 123
- request for quotation (RFQ), 123
- request or invitation for bid (RFB), 123
- re-shoring, 128
- respect for people, 219
- retailers, SCM, 4
- Retail Link, 64
- return on assets (ROA), 143
- return on investment (ROI), 143
- reverse auction, 131
- reverse engineering, 101
- reverse logistics, 6, 144–145
- risk mitigation, 122
- Roots, 130–131
- Ryanair transports, 96, 102

S
- safety stock, 193, 201–202
- sales and operations planning (S & OP), 181–183, 238
- sawtooth model, 196
- scatter diagrams, 227
- scope, 129, 247, 248
- sealed bid auction, 131
- seasonal index, 174
- seasonal inventory, 193
- selective distribution, 86
- sensual elements, 100
- sequential interdependence, 254
- service inventory, 191
- setup cost, 194
- setup time, 222
- shadow pricing model, 309
- shortage costs, 194
- signal kanban, 222
- simple moving average, 170–171
- single sourcing, 128
- Six Sigma, 216
- Six Sigma quality
  - definition, 236
  - lean six sigma supply chain
    - developing, 238–239
    - impact on supply chain activities, 239–240
    - methodology, 236–237
- Snedeker Global Cruises, 135
- social risks, 312
- social sustainability, 297, 298
- sourcing, 10
  - bidding or negotiation, 125
  - commercial versus consumer sourcing, 121–122
  - cost versus price, 124–125
  - definition, 120
  - evolution of, 120–121
  - financial impact, 122
  - information impact, 122
  - measuring sourcing performance, 132–133
  - operational impact, 122
  - process, 123–124
  - risk mitigation, 122
  - and SCM
    - domestic versus global sourcing, 128–129
    - e-auctions, 130–132
    - functional versus innovative products, 125–128
    - outsourcing, 129
    - single versus multiple sourcing, 128
- strategic sourcing, 120
- speedy automotive, 185–186
- SQC see statistical quality control (SQC)
- stable supply process, 126
- standardized strategy, 78
- Starbucks supply chain, 4
- statistical process control (SPC), 228
- statistical quality control (SQC)
acceptance sampling, 228–229
control charts for attributes, 235
descriptive statistics, 228
process capability, 229–233
process control charts, 234
sources of variation, 229
SPC, 228
Steinway Pianos, 87–88
storage, 146
strategic sourcing, 120
structural conflicts, 257
supplier resiliency score, 281
suppliers, SCM, 4
supply chain management (SCM)
boundary-spanning nature
cross-enterprise integration, 11–12
intraorganizational integration, 10–11
bullwhip effect, 7
careers, 23
collaboration, 6
competitive supply chain see competitive supply chain
coordinated, 5–6
customer focus, 7–8
definition, 3
forecasting, 162
information sharing, 6
logistics, 143, 144
logistics function, 12
managing through, 6–7
operations management, 99
professional organizations, 23
rise of, 12–13
service supply chain, 8–9
sourcing
domestic versus global sourcing, 128–129
e-auctions, 130–132
functional versus innovative products, 125–128
outsourcing, 129
single versus multiple sourcing, 128
stages, 4
sustainability see sustainable supply chain management
trends in
big data analytics, 18
3-D printing or additive manufacturing, 19
financial supply chain, 22–23
globalization, 16
information technology, 17–18
innovation, 21–22
intelligent assembly robots, 19
lean supply chain, 20
managing supply chain disruptions, 20
open-source hardware, 19
outsourcing, 16–17
postponement, 19–20
supply chain security, 21
sustainability and the “green” supply chain, 21
supply chain masters, 43
supply chain network, 4–5
supply chain processes
stages of, 58–60
vertical integration versus coordination, 60
supply chain relationship
connecting information technology, 246, 247
diluting power, 266–267
dimensions, 247–248
dispute resolution procedures
arbitration, 258–259
litigation, 258
mediation, 259
negotiation, 259
keiretsu supplier-partnering model, 265, 266
management and design, 246
matrix
alliances, 250–251
contractual relationships, 250
nonstrategic transactions, 249–250
partnerships, 250
partnership agreements, 265–266
physical supply chain structure, 246, 247
sources of conflict, 256–257
trust-based relationship
assessing relationship, 253–254
effective conflict resolution mechanisms,
designing, 255
effective contracts, creating, 254–255
identifying operational roles, 254
managing, 255–256
versus power-based relationships, 252–253
supply chain strategy
building blocks of
customer service strategy, 37–39
distribution strategy, 35–36
operations strategy, 33–35
sourcing strategy, 36–37
versus business strategy, 28
competitive advantage
cost-productivity advantage, 29–30
product value advantage, 30–31
SCM, source of value, 31–32
competitive priorities
cost, 40
dimensions, 42–43
innovation, 41
quality, 41–42
service, 42
time, 40–41
definition, 28
measure of competitiveness
interpreting productivity, 45–46
productivity measures, 45
small versus large firms, 43
supply chain strategy (contd.)
  strategic alignment, 29
  supply chain adaptability, 43–44
supply chain system
  business process, 51–53
  distribution process, 51
  IT design support, 51, 52
  management process, 51
  managing supply chain processes, 53–54
  supply chain network design, 51, 52
supply uncertainty, 126–128
sustainable supply chain management
  business contexts, 304
  carbon footprint, 307–308
  community relations, 301
  compliance, 306
  costing systems, 309
  cost-of-control, 308–309
  damage costing, 309
  defining sustainability, 295–297
  ecological footprint, 307
  enforcement, 306
  environmental sustainability, 297–299
  ethical responsibility, 302
  existence value, 308
  external context of, 303–304
  feedback loops, 305
  financial performance, 305
  food mile, 308
  Great Pacific Garbage Patch, 296
  Haitian Oil, case study, 317–318
  human and financial resources, 304
  innovation, 306–307
  internal context, 304
  LCA, 307
  leadership, 304
  legal compliance, 301
  option value, 308
  in practice
    marketing sustainability, 315
    packaging, 313–314
    process design, 315
    product design, 311–312
    sourcing, 314
    unintended consequences, 315–316
principles
  business relationships, 300
  community involvement and economic development, 300
  employment practices, 300
  ethics, 299
  financial return, 300
  governance, 299
  protection of the environment, 300
  transparency, 299–300
  value of products and services, 300
  processes, 304–305
  revenue, 302
  risk assessment
    fat tails, 310
    fuzzy logic, 311
    Monte Carlo simulations, 311
    real option analysis, 311–312
    scenario-based analysis, 310–311
  social sustainability, 297, 298
  stakeholders’ reaction, 305
  Supply Chain Sustainability Model, 303
  sustainability performance, 305
  TCO, 307
  use value, 308
  Sysco, 148

T
  takt time, 111–112
  target marketing, 73, 78
  technical standards and health regulations, 286
  Tesco, 18–19
  Tesla vehicles, 94–95
  theory of constraints (TOC)
    capacity implications, 57–58
    system constraints, 54–56
    system variation, 56–57
  third-party logistics (3PL) providers, 153
  3-D printing/additive manufacturing, 19
  time series forecasting models
    exponential smoothing, 171–172
    mean, 169–170
    moving averages, 170–171
    seasonality adjustment, 174–175
    trend adjusted exponential smoothing, 172–173
  time series models, 168
  total cost of ownership (TCO), 124, 307
  total quality management (TQM), 219, 283
  costs of quality, 225
  ISO 9000, 227–228
  quality tools, 225–227
  VOC, 224–225
  tourism forecasting, 161
  Toyota, 119
  Toyota Motor Corporation, 32
  trade protection mechanisms, 284
  transactional marketing, 74
  transactional view, 53
  transformation role, 95, 96
  transportation, 272
    air, 149
    cost of, 145
    distribution network design, 145
    economies of distance, 147, 148
    economies of scale, 147
    multimode, 149
    Northeast passage, 149
pipeline, 149
place utility, 147
product characteristics, 145
rail, 149
tucks, 148
water, 148–149
transportation inventory, 193
trends in SCM
  big data analytics, 18
  financial supply chain, 22–23
  globalization, 16
  information technology, 17–18
  innovation, 21–22
  intelligent assembly robots, 19
  lean supply chain, 20
  managing supply chain disruptions, 20
  open-source hardware, 19
  outsourcing, 16–17
  postponement, 19–20
  supply chain security, 21
  sustainability and the “green” supply chain, 21
  3-D printing/additive manufacturing, 19
trigger price mechanism, 286
trucks, 148
trust-based relationship
  assessing relationship, 253–254
  effective conflict resolution mechanisms, designing, 255
  effective contracts, creating, 254–255
  identifying operational roles, 254
  managing
    clear method of communication, 255
    commitment, 255
    fairness, 256
    performance visibility, 255
    versus power-based relationships, 252–253
U
Uber, 145–146
United Parcel Service (UPS), 140–141, 153
V
value chain/value network, 4
values conflicts, 257
value segments, 31
Value Stream Mapping (VSM), 239
Vendor Managed Inventory (VMI), 30, 211
vertical integration, 60
virtual teaming, 129
voice of the customer (VOC), 80–81, 224–225
Voluntary Interindustry Commerce Standards (VICS), 180
W
Wal-Mart, 8, 13, 16–17, 29, 30, 98–99, 273–274
warehousing, 271
  cross-docking, 151
  facility location, 151–152
  in supply chain, 150
waste, 217
water transportation, 148–149
weeks-of-supply, 133
weighted moving average, 171
wholesalers/distributors, SCM, 4
wireless communication technologies, 17
work-in-process (WIP), 190
World Health Organization (WHO), 162–163
World Trade Organization (WTO), 285
Z
Zara, Spanish retailer, 15
Zoots, 191