Index

A
accept decision point (ADP) 158
agricultural freight traffic 295
agriculture freight flow 295
annual average daily traffic (AADT) 318
ARIMA (Auto-Regression/Integrated trend 199

B
backlogging model 350
Bin Packing Problem 275, 292
boundary-parameter limits 164
bounded fuzzy number linear programming (BF-NLP) 42

capital constraint 372, 376
channel coordination research 231
city logistics activities 274-275
Constraint Programming (CP) 256
cost-benefit ratio (CBR) 319
cost constraint 375
crossover operators 321
customer choice behavior 231
customer lifetime value (CLV) 199

direct channel 230-242
Direct Marketing Education Foundation (DMEF) 197, 199
discounted cash flow (DCF) approach 383
distribution centers (DCs) 274
dual channel supply chain 230, 232, 242
Dual Kriging 26, 39
dynamic programming 85, 122, 314-315
dynamic stochastic knapsack problem (DSKP) 111
dynamic wall space decomposition 278

E
Enhanced Russell measure model 65
EOQ (Economic Order Quantity) model 372
expanded technological change (ETC) 217, 223

F
forecasting models 200-201
formal business forecasting system 198
fundraising science 197
Fuzzy Linear Programming (FLP) 40, 42, 45, 59, 62-63, 65-67, 80-81, 104, 328-329, 333, 335
fuzzy mathematical programming 40, 63, 65-66, 81, 94-96, 107, 190
fuzzy multi-objective (FMOBL) programming model 65
fuzzy number linear programming (FNLP) 45, 65
Fuzzy set algebra 95, 98
fuzzy simplex algorithms 79
fuzzy transportation problem 328-330, 332, 334, 337, 339-341, 343, 346
Fuzzy Variable Linear Programming (FVLP) 41

G
game theory 231
Index

Geographic Information System (GIS) 315

H
heterogeneous service sensitivity 231
Highway alignment optimization 272, 313-315, 319-324, 326
Human route choice behavior 317

I
indifference buying price of information (IBP) 111
infinite-horizon problem 118
inflationary environment model 377
inner-city logistics 291
intensity of preference 112, 121
inventory costs 275, 351
inventory depletion 384
inventory management 350, 390

K
Knapsack Loading Problem 275

L
Latin Hypercube Sampling (LHS) 30
layer-building method 277

M
maintenance optimization 83-84, 92-93

Malmquist index
  efficiency change (EC) 217, 220-221
  measurement 217, 220
  technological change (TC) 217, 220
Markowitz portfolio selection 171
Matlab 30-31, 162
metamodels 26-27, 38
minimal cost configuration 85
Mini-max regret criterion 172, 185
Mixed Integer Programming (MIP) 256
modern portfolio theory 170, 173
Monte Carlo simulation 84, 302-303
Multi Depot Vehicle Routing Problem (MDVRP) 252
multi-state-series-parallel system 85
mutation operators 320

N
naive forecasting method 197
National Stock Exchange (NSE) 172
network optimization 58-59, 314
nondegeneracy assumption 69-70

O
optimal replenishment cycles 350
optimal wholesale price 231-232, 234, 236
Optimum Curvature Principle (OCP) 314
order level inventory model 378, 382, 390
Ordinary Kriging (OK) 26-27

P
Pareto optimality 98
planning horizon 349-351, 353, 355, 358-359, 361-362, 369-370, 377
portfolio optimization models 171-172
portfolio selection problems 170-171, 191
possibility portfolio selection model 171
power pattern demand (PPD) 382
Probabilistic Vehicle Routing Problem (PVRP) 252
production possibility set (PPS) 216-217
pure efficiency change (PEC) 217, 220-221, 223, 228

R
Recency, Frequency, and Monetary Value (RFM) 199
regressional relationships 164
Regret function 184-185, 189-190
regulation efficiency change (REC) 217, 223, 228
reject decision point (RDP) 158
relative value of information (RVOI) 112
retailer’s cycle 373

S
scale efficiency change (SEC) 217, 220-221, 223, 228
scale-parameter ratio 155

sensitivity analysis
  classical 1
  linear programming 3, 22-24
  local perturbation 3-4
  values 9
Simple Kriging (SK) 27-28
simplex method 4, 42-43, 45, 58, 62-63, 65, 69-73, 75, 77-81, 329
Solomon Benchmark problems 253
space filling curves (SFC) 255
SPRT (sequential probability ratio test)
binomial SPRT 155-156
optimal boundaries 156
theory 155, 158
stochastic assignment problems (SSAP) 111
Stochastic demand 242, 252-257, 265, 271, 293, 303, 308
stochastic simulation interpolation 25, 30, 37
stochastic truck routing 294, 306-307
Strip Packing Problem 275
supplier selection problem 3, 14-15
supply chain performance 232

T
Taylor expansion 25, 27, 29, 31
Taylor Kriging (TK) 27, 29
total income variance (TIV) minimization problem 171
traditional inventory models 350
traditional sales channels 231
traffic flows 295, 308
Transportation Analysis Zones (TAZs) 306

transportation infrastructure 294-295, 316
Transportation models 328
trapezoidal fuzzy numbers 41-44, 60, 62, 66-67, 80, 328-331, 333, 336, 339, 341
Trapezoidal fuzzy numbers (TRFN) 43
Traveling Salesman Problem (TSP) 255
two-warehouse partial backlogging inventory problem 362

U
Universal Kriging (UK) 26
urbanization 274
user equilibrium (UE) 317, 321

V
Vehicle Routing Problem (VRP) 252
Vehicle Routing Problem with Time Window (VRPTW) 252

W
wall-building method 274, 276-279, 281, 283-284, 291, 293

Y
Yager index 94-96, 100-102, 104