## Index

5-S Housekeeping, 216, 234
10-S approach, 218–222, 223, 231
40-second Boyd, 37

Ackoff, Russell, 25
Action, benchmarking code of conduct and, 280
Active data analysis, 111–113
Adaptation, improving by, 49–52
Adaptive learning system, 263–265
Administration, of benchmarking, 266–267
Ala-Pietilä, Pekka, 184
Alignment:
  - customer, 141–146
  - measurement system, 267–269
  - performance measurements, 151
Allaire, Paul, 179
AlliedSignal, xiv, 38
American Society for Quality (ASQ), 291
Analysis of Variance (ANOVA), 117, 219
Andersen Consulting, xxxiii
Application rules, 151
Aristotle, 30–31
Asset uniqueness, 142
AT&T, 198
Attribute data, 100–102
  - agreement analysis, 106

B vs. C Pareto charts, 123–124
Barriers, entry, 142
Baseline analysis, 17
  - conducting a study and, 85
Benchmarking:
  - corporate partnerships and, xxviii–xxx
  - diffusion, xxxi–xxxii
  - future challenges, xxxv–xxxviii
  - history of, xxiii–xxvi
  - institutionalization, xxxii–xxxiv
  - mainstreaming, xxxiv–xxxv
  - reason for, xxvi–xxvii
  - See also specific type
Benchmarking Council of the Strategic Planning Institute, xxxv
The Benchmarking Exchange, 292
The Benchmarking Network, 292
Berra, Yogi, 122
Best practice, 15–16, 282–283
  - vs. theory of operations, 26–28
Big Hairy Audacious Goal (BHAG), 57
BMW, 174
INDEX

Book of Five Rings, 45
Bossidy, Larry, xiv, 38
Boyd, John R., 36
Boyd Cycle, 36–38, 60, 147, 148–150
Break-even time (BET), 171–172, 226
Bugelman, Robert, 45
Buildable combinations, 174
Built to Last, 55
Business:
  fundamentals, 56
  model adaptation, 4
  organizational level, 46, 132, 133, 135, 136
  learning experiences and, 146–147
  process model, placing strategy into, 132–137
Business Systems Engineering, 143–144
Buyer power, 142
Camp, Robert C., ix, xxvii, xxxii, xxxv, 4, 47, 291
Canon:
  crisis and, xxvi
  extending lean learning, 233
Capability:
  enabling effective benchmarking, 266–267
  internal, 261–262
  process, 16–17
  See also Measurement system, evaluating capability
Change:
  investigating nature of, 29–34
  leveraging for competitive advantage, 36–38
  recognizing the levers of, 46–47
Characterize phase, 97
Christensen, Clay, 27, 28
Cityphone, 187
Collaborative benchmarking, 12
  competitiveness and, 259–262
Collins, Jim, 55
Common cause, 15
Compaq, innovation stimulus, 170–171
Comparative analysis:
  assessments, 151
  competitive advantage and, 89
  Competence, development and internal capability, 261–262
  Competition, 131–132
  benchmarking, 11, 13
  benefits analysis, 14
  collaboration and, 259–262
  comparative analysis and, 89
  customer alignment, 141–146
  leveraging change for, 36–38
  product analysis and, xxxvi
  Competitive Advantage, 141
  Competitive Strategy, 141
  Completion, benchmarking code of conduct and, 280
  Complex adaptive system (CAS), 53
  Complexity theory, learning from, 52–54
  Conduct, benchmarking code of, 277–280
  Confidentiality, benchmarking code of conduct and, 278–279
  Continuous improvement, 217
  Control points, 153
  Control rules, performance observations, 151
  Cost of goods sold (COGS), statistical comparisons and, 94, 95
  Cowan, George, 52
  Creative imitation, xxviii
  Crisis, 168–169
  Critical Success Factor (CSF), 16, 282
  Cultural adaptation, 4
  Customer dashboard, 157
    for daily management, 159–161
  Customer intimacy, 145
  Customer satisfaction, 268
  Customer Takt Time, 224
  Cycle time, 37, 224, 227
    statistical comparisons, 99, 101
Dantotsu, 18, 19, 60
Data:
  collection
    methods of, 87–88
    performance, 286
  evaluating performance, 102–106
  fishbone, 125, 126
  review, existing, 87
  sources and defining benchmarking, 10–15
  types, statistical comparisons, 100–102
  See also specific type
Defects:
  eight wastes and, 214
    statistical comparisons, 99
Define-Measure-Analyze (DMA) process:
  benchmarking specialists, 284
  conducting a study, 85
Define-Measure-Analyze-Improve-Control (DMAIC), xv, 47–49, 51, 173

312
Index

benchmarking specialists, 269
continuous improvement, 218
General Motors and, 176
organizational performance and, 150
process benchmarking, 64–66, 68–70
statistical comparisons, 97, 98
team training and, 269
Toyota and, 206, 251–252
Dell, 170
Deming, W. Edwards, xxviii–xxix, 4, 22, 33, 175
Deming Prize, 235
Design of Experiments (DOE), statistical comparison, 122
design rule, 150–151
design for Six Sigma (DFSS), 173
diagnostic performance observations, 151
The Discipline of Market Leaders, 144
discrepant material segregation, 226
disruption, opportunities for, 254–256
distribution data, 103
drucker, Peter F., xii, 241, 242
dynamic champion, 187
earnings before interest and taxes (EBIT), 9
e-Benchmarking, xxxviii
Economic value added (EVA), 268
The Effective Executive, xii
eight wastes, 215
linkage of, 214–215
Enable, 16
Engineering, reverse, xxxvi
Enterprise organization level, 46, 132, 133, 135, 136
learning experiences and, 146
Enterprise Resource Program (ERP), 271
entitlement, 17
equipment layout, 227
Ergonomic Operator Station, 250
Ericsson, strategic benchmarking studies, 186, 188, 189, 191
basis for beating, 194
insights into beating, 196–197
quality at, 192
Evolutionary progress, 57
Exchange, benchmarking code of conduct and, 278
Execution excellence, 139
Executive Book Summaries, x
Exploitation, 54–55
Exploration, 54–55
Federal Express, 170–171
Finished Goods Inventory (FGI), 225
Fiorina, Carly, 172
First-Party Contact, benchmarking code of conduct and, 279
First Pass Yield, 227
Fishbone, data. see Data, fishbone
Floor Space Required, 225, 229
Florida Power & Light, xxxi
Focus groups, conducting a study, 88
Fortune Magazine, x
Fragmentation, 264
functional benchmarking, 11, 13
benefits analysis, 14
Gage repeatability and reproducibility (R&R) studies, 106–107
Gap analysis, 17
General Electric, 157
Best-Practice Network, xxx
competitiveness, 260
extending lean learning, 234–235
General Motors:
collaborative benchmarking and, 12
cross-Industry Study, xxx
functional benchmarking, 175–177
generic benchmarking, 11, 13
benefits analysis, 14
Global Benchmarking Network (GBN), xxxiv, xxxv, 261, 291
GOAL/QPC Research Committee, xxx–xxxii, 291
Gödel, Kurt, 52–53
Goodness, evaluating, 106–108
Grab samples, 105
Gravity, theory of, 54
Grayeff, Michael, 198
Grayson, Jackson, xxxii
Grove, Andy, 45, 49
Hamel, Gary, 3, 184
Hammer, Michael, 170
Hannukainen, Timo, 195
Harry, Mikel, xvi
INDEX

Harvard Business Review, 210
Harvard Business School, 27, 141, 156
Heisenberg, Werner, 31
Henderson, Bruce, 151
Heraclitus of Ephesus, 30
Hewlett, Bill, xxv, 96
Hewlett-Packard (HP), x, xxv, xxx
  extending lean learning, 232–233, 234
  internal benchmarking, 171–173
  statistical comparisons, 96
  strategic benchmarking studies, 185–186, 190, 195
Honeywell, xiv
Hoshin kanri, x, xxx, 49, 162, 243, 246–247, 255
How to Lie with Statistics!, 128
Huff, Darrel, 128
Hypothesis, 29
IBM, 179
I-chart, 119–120, 121
Industrial Technology Institute, 26–27
Informationszentrum Benchmarking (IZB), xxxiv
Innovation stimulus, 170–171
In-Process Defects Detected, 225, 229
In-Process Scrap, 225, 229
Intellect, eight wastes and, 214
Internal benchmarking, 11, 13
  benefits analysis, 14
International Benchmarking Clearinghouse (IBC), xxxii, xxxiii, 163, 261
American Productivity & Quality Center (APQC), xxxii, xxxv, 165, 261, 277, 291
Internet:
  global benchmarking and, xxiii
  mainstreaming benchmarking, xxxiv
  sources, 291–292
Interviews:
  conducting preliminary, 286
  preliminary, conducting a study, 85, 88
Inventory, eight wastes and, 214
ISO9000, 177
Japanese Union of Scientists and Engineers (JUSE), xxxi
Jidoka, 209
JMP Software, 292
  statistical comparisons, 104
Job Categories, 225

Juran, Joseph M., xxix
Just-in-Time (JIT) Production, 209, 210, 216
  extending lean learning, 235
Kaizen Blitz, 252, 269–270
Kano, Noriaki, 159
Kano model, 139–141
Kant, Immanuel, 31
Kaplan, Robert S., 156
Kearns, David, xxvi, xxxi–xxxii
King, Bob, xxxi
KISS principle, 96
Kobyashi, Tony, xxvi

L.L. Bean, xxviii, 178
  business crisis and, 168–169
Lean production, xxiv, 205–208
  continuous improvement, 218
  evaluating maturity of, 235–237
  extending learning, 232–235
  implementing in a factory environment, 222–231
Learning experiences, generating strategic, 146–147
Legality, benchmarking code of conduct and, 278
LeVitt, Dick, 185
Library Journal, x
Line of sight, 155
Luria, Daniel, 26

General Motors, xxviii, xxxi–xxxiv, 177, 200
Malcolm Baldrige National Quality Award, xxviii, xxxi–xxxiv, 177, 200
  General Motors and, 176
Management practice, xi–xii
Management process, 134
Man-Machine Interface, 217
Market Value Added (MVA), 268
Marx, Karl, 30
Material Flow Lines, 226
Material Movement Time, 228
Matrix plot, 124–125
Mazda, paradigm shift, 169–170
Mean Time to Failure (MTTF), 192
Measure-Analyze-Improve-Control (MAIC), 65
Measurement system:
  alignment of, 267–269
  creating a capable, 155–159
  design, 247–253
Index

elements of, 155–154

evaluating capability, 151–152

Milliken, Roger, 3

Minitab Software Package, 292

statistical comparisons, 104, 120, 124

Mistake avoidance, 40, 217

Mizuno, Shigeru, 246

Mobira, 187

Motion, eight wastes and, 214

Motivation, 168–171

Motorola, strategic benchmarking studies, 186, 188, 189, 191–192

basis for beating, 195–194

insights into beating, 195–196

Muda, 213

Multifactor comparative graphical analysis, 124–126

Musashi, Miyamoto, 43

Mutually exclusive and completely exhaustive (MECE), 28

NBC television, xxviii, 169, 175

Nixon, Richard, xxxiii

Nokia Mobile Phones (NMP), strategic benchmarking studies, 184, 189, 190, 192, 197–201

business reason for, 186–189

creating competitive advantages, 189

Nonrepresentative samples, 109

Non-Value Added Time, 228

Norton, David P., 156

Null hypotheses, 176

Nuovo, Frank, 198

N-Way ANOVA, 120, 122

Observational statistical study, 111–113

Ockham’s Razor, 35

statistical comparisons and, 96

Ohno, Taiichi, xxiv, 208, 213

Ollila, Jorma, 187

One-Piece Flow, 216

Online Part Storage, 226

Online Supply Storage, 226

OODA Cycle, 37–38

Operating committee, 283

Operating space, 161–162

Operation theory, vs. best practice, 26–28

Operational Availability, 224, 227

Operational benchmarking, 8, 10, 15, 282. See also Toyota, Production System (TPS)

Operational definitions, 106

Operations excellence, 145

Operations organizational level, 46, 152, 153, 155, 156–157

learning experiences and, 147

Operator Cross-Training, 225, 229

Operator Safety, 230

Order Turnaround Time (OTAT), 224

Organizational levels:

measuring performance management and, 133

translating into business processes, 155

Organizational performance, measuring and managing, 150–151

Organizational purpose, 161–162

Organizational resources, strategic benchmarking studies, 202

Origins, benchmarking, ix–xi

Overprocessing, eight wastes and, 214

Overproduction, eight wastes and, 214

Packard, Dave, xxv, 254

Paradigm shift, 169–170

Parametric analysis, 124–125

Partial differential equation (PDE), 43

Passive data analysis, 111–113

PDCA, process benchmarking, 71

Perceptual benchmarking, 9–10

Performance-focus of benchmarking, 9

Performance Measurement System, 230

nature of, 96–100

Performance Records, 227

Peterson, Don, 169

Plan-Do-Study-Act model, 64

Policy deployment. See Policy management

Policy management, 241–245

Japanese approach to, 245–247

program for, 243–245

See also Measurement system, design; Strategic planning

Popper, Karl, 33

Population, 104

Porter, Michael, 141

Practice, categories of, 4–10

Prahalad, C. K., 3

Predictability, estimating performance, 41–44, 151

Preparation, benchmarking code of conduct and, 279–280

Process audit, 274–275
<table>
<thead>
<tr>
<th>Process benchmarking</th>
<th>Revolutionary progress, 57</th>
</tr>
</thead>
<tbody>
<tr>
<td>analyze phase</td>
<td>Rivalry, 143</td>
</tr>
<tr>
<td>benefits and drawbacks</td>
<td>Rolled Throughput Yield (RTY), 224</td>
</tr>
<tr>
<td>collect phase</td>
<td>Sample, 104–105</td>
</tr>
<tr>
<td>comparative analysis</td>
<td>Sante Fe Institute, 52</td>
</tr>
<tr>
<td>competitive advantage</td>
<td>Savin, crisis and, xxvi</td>
</tr>
<tr>
<td>conducting a study</td>
<td>Schmidt, Steve, 96</td>
</tr>
<tr>
<td>definitions of components</td>
<td>Schonberger, Richard J., 233</td>
</tr>
<tr>
<td>DMAIC process</td>
<td>Schumpeter, Joseph, 25, 241</td>
</tr>
<tr>
<td>improve phase</td>
<td>S-curve, 49</td>
</tr>
<tr>
<td>loading six sigma into</td>
<td>Self-assessment:</td>
</tr>
<tr>
<td>plan phase</td>
<td>factorywide, 236</td>
</tr>
<tr>
<td>Process Cycle Time Efficiency</td>
<td>workstation level, 237</td>
</tr>
<tr>
<td>Process enablers</td>
<td>Self-organization, spontaneous, 52</td>
</tr>
<tr>
<td>Process flow diagram</td>
<td>Shewhart Cycle, 64</td>
</tr>
<tr>
<td>Process monitoring</td>
<td>Shingo, Shigeo, xxiv</td>
</tr>
<tr>
<td>statistical comparisons</td>
<td>Single data point, 103</td>
</tr>
<tr>
<td>Process owner</td>
<td>Single-factor comparative data analysis, 123–124</td>
</tr>
<tr>
<td>Process performance measures</td>
<td>Single Minute Exchange of Dies (SMED), 216</td>
</tr>
<tr>
<td>sound</td>
<td>SIPOC model, xv–xvi</td>
</tr>
<tr>
<td>Process and workflow analysis</td>
<td>Six Sigma, x–xi</td>
</tr>
<tr>
<td>Procter &amp; Gamble</td>
<td>contribution to benchmarking, xiv–xvi</td>
</tr>
<tr>
<td>Product analysis, competitive</td>
<td>See also Define-Measure-Analyze-Improve-Control (DMAIC)</td>
</tr>
<tr>
<td>Product creation process</td>
<td>Society of firms, 260</td>
</tr>
<tr>
<td>Production Effectiveness</td>
<td>Spear, Steven J., 210</td>
</tr>
<tr>
<td>Production Throughput</td>
<td>Special cause event, 15</td>
</tr>
<tr>
<td>Product leadership</td>
<td>Special interest group (SIG), 12</td>
</tr>
<tr>
<td>Product/Model Changeover Time</td>
<td>Specialist, benchmarking, 284</td>
</tr>
<tr>
<td>Product realization process</td>
<td>Spoken quality, 145</td>
</tr>
<tr>
<td>Product Travel</td>
<td>Stakeholder value, 268</td>
</tr>
<tr>
<td>Profit Impact of Market Strategy (PIMS), 175, 291</td>
<td>Standard Operating Procedure (SOP), 163</td>
</tr>
<tr>
<td>strategic benchmarking studies, 188</td>
<td>appendixes, 290</td>
</tr>
<tr>
<td>Profound knowledge</td>
<td>benchmarking method, 285–287</td>
</tr>
<tr>
<td>Program for performance</td>
<td>control plan, 288–289</td>
</tr>
<tr>
<td>Project sponsor</td>
<td>definitions, 282–284</td>
</tr>
<tr>
<td>Pull System</td>
<td>document owner, 282</td>
</tr>
<tr>
<td>Quality, as the key business outcome, 137–141</td>
<td>management process, 285</td>
</tr>
<tr>
<td>Quality Function Deployment (QFD), 172</td>
<td>philosophy and approach, 284–285</td>
</tr>
<tr>
<td>Questionnaires:</td>
<td>practical advice, 289–290</td>
</tr>
<tr>
<td>conducting a study</td>
<td>process flow diagram, 287</td>
</tr>
<tr>
<td>preparing</td>
<td>purpose, 281</td>
</tr>
<tr>
<td>Preparing</td>
<td>record and storage retention, 288</td>
</tr>
<tr>
<td>Radar diagram, 125–126</td>
<td>references, 281</td>
</tr>
<tr>
<td>Raw Material Buffers, 230</td>
<td>scope, 281</td>
</tr>
<tr>
<td>Recognize, 47–49</td>
<td>Standard Work, 217</td>
</tr>
<tr>
<td>Required Time, 228</td>
<td>Statistical analysis software, 292</td>
</tr>
<tr>
<td>Return on Capital Employed (ROCE), 9</td>
<td>Statistical comparisons, 93–94, 129–130</td>
</tr>
<tr>
<td></td>
<td>benchmarking comparisons, types of, 115–122</td>
</tr>
</tbody>
</table>
Variables data, 100–102
measurement studies, 106–107
Visible Factory, 226
Visible Work Standards, 230
Visits:
conducting site, 286
informal, xxxvi–xxxvii
site, conducting a study, 86, 88
Visually Controlled Factory, 217
Voice of the process, 114, 120
Waiting Time, 228
Waste reduction, 216
Welch, Jack, 254
Wharton Graduate School, 176
Wiarda, Edith, 26
Wiersema, Fred, 144
Wittgenstein, Ludwig, 32
Work-in Process, 229, 230
Work Standards, 227
Workload Management, 216
Workstation Effectiveness, 229
Workstation Ergonomics, 227
Workstation Material Flow, 230
World class performance, 18
operational definition of, 19–20
Xerox Benchmarking Network, xxviii
Xerox Corporation, xvi, ix, x, xxvi–xxviii
awards, xxxi–xxxii
benchmarking specialists, 269
business crisis and, 168–169
extending lean learning, 233, 234
generic benchmarking study, 177–179
strategic benchmarking studies, 184–185, 190
Yokagawa Hewlett-Packard (YHP), 232–233
Z-chart, 123
Zimmerman, Lawrence, 233