

FIT SIGMA

*A Lean Approach to Building Sustainable
Quality Beyond Six Sigma*

Ron Basu



A John Wiley and Sons, Ltd., Publication

Contents

Preface	xi
Acknowledgements	xv
About the Author	xvii
1 The Evolution of Six Sigma, Lean Sigma and FIT SIGMA™	1
1.1 Introduction	1
1.2 First Wave: As Is to TQM	3
1.3 Second Wave: TQM to Lean Sigma	3
1.4 Third Wave: Lean Sigma to FIT SIGMA	4
1.5 More about Six Sigma	5
1.6 What is Six Sigma?	6
1.7 The Structured Approach of Six Sigma	8
1.8 What is Lean Sigma?	10
1.9 More on Lean Sigma	13
1.10 Why FIT SIGMA?	13
1.11 Summary	14
2 More about FIT SIGMA	15
2.1 Introduction	15
2.2 Fitness for the Purpose	17
2.3 Sigma (Σ) for Improvement and Integration	19
2.4 Fitness for Sustainability	28
2.5 Summary	41
3 DMAIC Methodology for FIT SIGMA	43
3.1 Introduction	43
3.2 DMAIC Full	44
3.3 DMAIC Lite	50
3.4 Kaizen Event	52
3.5 Summary	54

4	FIT SIGMA Tools	57
4.1	Introduction	57
4.2	Tools for 'Define'	57
4.3	Tools for 'Measure'	66
4.4	Tools for 'Analyse'	77
4.5	Tools for 'Improve'	87
4.6	Tools for 'Control'	98
4.7	Summary	105
5	FIT SIGMA in Large Manufacturing Operations	107
5.1	Introduction	107
5.2	Fitness for the Purpose	107
5.3	Sigma (Σ) for Improvement and Integration	108
5.4	Fitness for Sustainability	116
5.5	FIT SIGMA in Supply Chain Management	116
5.6	Summary	118
6	FIT SIGMA in Service Operations	119
6.1	Introduction	119
6.2	The Divide Between Service and Manufacturing	120
6.3	Objectives of a Service Organisation	121
6.4	'Fitness for the Purpose' for Service Organisations	123
6.5	'Sigma (Σ) for Improvement' for Service Organisations	124
6.6	Fitness for Sustainability	126
6.7	Summary	128
7	FIT SIGMA in Small and Medium Enterprises	129
7.1	Introduction	129
7.2	'Fitness for the Purpose' for Small and Medium Enterprises	131
7.3	'Sigma (Σ) for Improvement' for Small and Medium Enterprises	132
7.4	Fitness for Sustainability	135
7.5	Summary	136
8	FIT SIGMA in Project Management	137
8.1	Introduction	137
8.2	FIT SIGMA Principles in Addressing Project Management Objectives	139
8.3	FIT SIGMA in a Major Project (High Speed 1)	145
8.4	Summary	148
9	FIT SIGMA in Green Thinking	149
9.1	Introduction	149
9.2	What is Green Thinking?	150
9.3	Why FIT SIGMA is Relevant to Green Thinking	151
9.4	The Roles of Stakeholders	152
9.5	How FIT SIGMA Can Help Green Thinking	156
9.6	Green Sigma	159
9.7	Summary	160

10	Implementation of FIT SIGMA: Making It Happen	161
10.1	Introduction	161
10.2	Selection of Tools and Techniques	161
10.3	Quality Programmes	162
10.4	Implementation for New Starters	163
10.5	FIT SIGMA for Successful Companies	181
10.6	External Consultants	181
10.7	Summary	182
11	More Case Examples	183
11.1	Introduction	183
11.2	Case Examples for Large Manufacturing Organisations	183
11.3	Case Examples for Services, SMEs, Projects and Green Thinking	196
11.4	Summary	201
	Appendix I Questions and Exercises	203
	Appendix II Introduction to Basic Statistics	207
	Appendix III Yield Conversion Table	213
	References	215
	Glossary	219
	Index	229