

Contents

1	Fundamental Concepts of Risk Management	1
1.1	Introduction	1
1.2	Historical Consideration of Risk	5
1.3	Period of Blood	6
1.4	Period of Tears	6
1.5	Period of Neurons	6
1.6	Philosophical Phase	6
1.7	Technological Phase	7
1.8	Scientific Phase	7
1.9	Economic Loss and Economic Benefit	7
1.10	Pure Risk	8
1.11	Risk Cause	8
1.12	Risk Severity	9
1.13	Risk Frequency	9
1.14	Risk Duration	9
1.15	Hazard	9
1.16	Physical Hazard	10
1.17	Moral Hazard	10
1.18	Morale Hazard	10
1.19	Fundamental Stochastic Components of Risk	11
1.20	Consequences of Risk	11
1.21	Reaction to Risk	12
1.22	Flight-Fight-Freezing Syndrome	13
1.23	Structural Elements of Firm	13
1.24	Objectives of Firm	14
1.25	Classifying Operations of Firm	15
1.26	Safety Operations	15
1.27	Risk Identification	16
1.28	Risk Measurement	16
1.29	Risk Treatment	17
1.30	Risk Control	17

1.31	Risk Avoidance	18
1.32	Control of Total Risk Severity	19
1.33	Separation of Risk Carriers.	20
1.34	Combination of Risk Carriers	21
1.35	Risk Transfer	21
1.36	Risk Financing	22
1.37	Risk Retention	22
1.38	Risk Insurance	23
1.39	Management Concepts	23
1.40	Management Approaches	26
1.41	Mathematical Approach of Management	26
1.42	Definition of Risk Management	27
1.43	Risk Management and Unprecedented Uncertainty	27
1.44	Risk Management Philosophy	27
1.45	Relationship of Risk Management to Management	27
1.46	Prerequisites of Applying Risk Management.	28
1.47	Risk Management and Insurance.	29
1.48	Risk Management Objectives	29
1.49	Risk Management and Human Needs	30
1.50	Safety Needs-Workplace—Risk Taking	32
1.51	Spiritual Growth and Future Needs	32
1.52	Social Progress and Proactive Risk Management.	32
1.53	Cost of Risk.	33
1.54	Data-Information-Knowledge	33
1.55	Information Operators	34
1.56	Disciplines Contributed to Risk and Risk Management	35
1.57	Risk Avoidance and Evolution of Memory.	35
1.58	Imaginary Risk and Brainwashing.	36
1.59	Specific Human Risk.	36
1.60	Risk Acceptance and Results of Calculations	36
1.61	Increasing Risk and Human Relations	37
1.62	Real Risk and Extraordinary Energy	37
1.63	Risk of Excessive Speed of Development.	37
1.64	Overthrow of Primitive Human Nature.	38
1.65	Risk and Need	38
1.66	Playing Man.	38
1.67	Developing Courage and Challenging Adversity	39
1.68	Adversities and Evolution	39
1.69	Risk in Society	39
1.70	Risky Human Confusion and Impact of Computer Revolution	40
1.71	Risk and Possession of Software	40
1.72	Risk of Atomic War and Genetic Material	41
1.73	Risks of Savanna	41

1.74	Inability of Treating New Risks	42
1.75	Boldness and Risk of Death	42
1.76	Specific Boldness and Risk of Isolation	42
1.77	Fear of Risk Taking	43
1.78	Inevitability of Thinking in Terms of Risk	43
1.79	Risk and Time	43
1.80	Mastery of Risk	44
1.81	Conversion of Risk Taking	44
1.82	Risks and Globalization	44
1.83	Nature of Man	45
1.84	Risk Taking and Values	45
1.85	Risk and Numbers	46
1.86	Risks and Human Activities	46
1.87	Risky Shift	46
1.88	Risk Acceptance	47
1.89	Risk as a Stimulus	47
1.90	Risk as a Choice Rather Than a Fate	47
1.91	Essence of Risk Management	47
1.92	Real Objective of Risk Management	48
1.93	Autopoiesis and Risk Management	48
1.94	Uncertainty Principle of Risk Management	48
1.95	Risk Management and Probability Theory	49
1.96	Fundamental Factors of Risk Management Evolution	49
1.97	Structural Elements of Risk Management	49
1.98	Risk Management and Quality Control	50
1.99	Risk Manager Activities	50
1.100	Risk Management as Necessity	50
1.101	Risk Management and Decision Making	51
1.102	Risk Management and Systemics	51
1.102.1	Environment of System	51
1.102.2	Aim of System	51
1.102.3	Transformation	52
1.102.4	Products of System	52
1.102.5	Driving Mechanism of System	52
1.102.6	Feedback Information	52
1.102.7	Regulation	52
1.102.8	Anticipation\Resilience	53
1.103	Combining Elements of Risk Management and Resilience	53
1.104	Ascendancy of Risk Management	54
1.105	Risk Management and Crisis Management	54
1.106	Risk Management and Cindynics	54
1.107	Risk Management and Stochastic Models	55

2	Stochastic Models of Risk Management Concepts	59
2.1	Introduction	59
2.2	Model of Risk Severity	60
2.3	Model of Risk Duration	60
2.4	Model of Risk Frequency	61
2.5	Total Risk Severity	65
2.6	Recovery Time of a Partially Damaged System	75
2.7	Time of First Damage of a System Threatened by a Random Number of Risks	77
2.8	Time of First Major Damage	80
2.9	Number of Ongoing Risk Occurrences	81
2.10	Multiplicative Models of Risk Severity	86
2.11	Riskiness	91
2.12	Total Risk Severity and Asset Liquidation	102
2.13	Total Risk Severity and Total Income	105
2.14	Recovery Time of a Partially Damaged System and Release Time of a Backup System	108
2.15	Vector of Recovery Times of Two Partially Damaged Systems	111
2.16	Recovery Time of a Partially Damaged System Under a Random Number of Competing Risks	115
2.17	Considering a System Under a Random Number of Competing Risks	119
2.18	Pair of Systems Under Competing Risks	122
2.19	Time of First Major Damage and Asset Liquidation	126
2.20	Time of First Major Damage and Loan Portfolio	128
3	Stochastic Models of Risk Management Operations	131
3.1	Introduction	131
3.2	Models of Risk Severity Reduction Operations	132
3.3	Models of Risk Duration Reduction Operations	141
3.4	Operations of Deleting Risk Occurrences with Constant Probability	152
3.5	Operations of Deleting Risk Occurrences with Random Probability	157
3.6	Integral Part Models of Risk Frequency Reduction Operations	162
3.7	Cost of an Operation of Deleting Risk Occurrences with Constant Probability	181
3.8	Capital of Treatment of Ongoing Risk Occurrences	189
3.9	Binomial Random Sums in Modeling Risk Control Operations	192

3.10	Modeling Risk Financing Operations	195
3.11	Time of First Retained Risk Occurrence and Total Cost of Deleting Risk Occurrences	199
3.12	Occurrence Time and Total Severity of First Retained Risk Occurrence	202
3.13	Free of Risk Occurrences Time Interval and Total Benefit of Applying a Risk Frequency Reduction Operation	206
3.14	Free of Risk Occurrences Time Interval and Loan Portfolio	209
3.15	Cost of Deleting Occurrences of a Risk with Constant Probability and Total Severity of First Retained Risk Occurrence	214
3.16	Convoluting Cost of Deleting Risk Occurrences with Constant Probability and Total Severity of First Retained Risk Occurrence	224
4	Stochastic Discounting Modeling for Concepts and Operations of Risk Management	231
4.1	Introduction	231
4.2	Present Value of a Single Cash Flow and Proactive Risk Management Decision Making	232
4.3	Present Value of Total Risk Severity	242
4.4	Recovery Time of a Partially Damaged System and Present Value of a Single Cash Flow	251
4.5	Recovery Time of a Partially Damaged System and Present Value of a Continuous Uniform Cash Flow	275
4.6	Time of First Damage for a System Threatened by a Random Number of Risks and Present Value of a Single Cash Flow	282
4.7	Time of First Damage for a System Threatened by a Random Number of Risks and Present Value of a Continuous Uniform Cash Flow	305
	Bibliography	313

Probability Distributions in Risk Management
Operations

Artikis, C.; Artikis, P.

2015, XIII, 317 p., Hardcover

ISBN: 978-3-319-14255-5