

Contents

1	Introduction to Software Engineering Innovation in Japan	1
1.1	Motivation	1
1.2	Literature Review	3
1.2.1	Information Service Industry in Japan	3
1.2.2	Innovation in the Software Industry	9
1.2.3	Research Approach	14
1.3	Research Objectives	17
1.4	Overview of the Book	18
	References	21
 Part I Industry and Software Engineering Capabilities from Surveys and Statistical Analyses		
2	The Surveys on Software Engineering Excellence	27
2.1	Structural Model and Research Question	28
2.2	Measurement Model and Literature Review	28
2.3	Software Engineering Excellence (SEE) Surveys	31
2.3.1	Conduct of the SEE Surveys	31
2.3.2	Calculation Results of SEE	32
2.4	Key Findings of SEE Surveys	34
2.4.1	Responses to Questionnaires on SEE	34
2.4.2	Responses to Questionnaires on Business Environment	38
2.4.3	Implications from SEE Relating Analyses	41
	References	46
3	Statistical Analysis Results and Practical Implications of the SEE Surveys	49
3.1	Base Model and Cross-Section Analysis Results	50
3.1.1	Base Model and Hypothesis	51
3.1.2	Analysis Results and Implications	52
3.2	Differences by Vendor Type	54
3.2.1	Manufacturer Spin-off Vendors	55

3.2.2	User Spin-off Vendors	56
3.2.3	Independent Vendors	57
3.2.4	Discussion	59
3.3	Panel Analysis Results of Software Engineering Capabilities	60
3.3.1	Model and Hypothesis	60
3.3.2	Analysis Results and Implications	62
3.3.3	Additional Analysis Results for Independent Vendors	63
3.3.4	Discussion	65
3.4	Results of Aggregation Analysis of Software Engineering Capabilities	66
3.4.1	Research Model	66
3.4.2	Analysis Results	67
3.4.3	Implications	68
3.5	Long-term Relationships among Software Engineering Capabilities and Business Performance	70
3.5.1	Long-Term Relationships between SEE and Profitability	71
3.5.2	Long-Term Relationships among SEE factors and Business Performance	73
3.5.3	Discussion	78
3.6	Effects of Business Environment on Software Engineering Capabilities and Business Performance	78
3.6.1	Research Model and Hypothesis	79
3.6.2	Implications	82
3.7	Lessons Learned from the Analysis Results	82
3.7.1	Summary of Statistical Analysis Results	82
3.7.2	Implications for Technological Innovation and Industry Policy	83
3.7.3	Limitations and Future Research	84
	References	87

Part II Research Relevant to Managing Innovation in Software Engineering in the Broader Sense

4	A Study into Characteristics of Software Vendors in Japan from a Competitive Environment and Resource-Based Viewpoint	91
4.1	Introduction	91
4.2	Research Method	93
4.3	Surveys of the Software Industry in Japan	95
4.4	Analysis, Results, and Discussion	95
4.5	Conclusions and Future Work	100
	References	102

5 IT Management Effectiveness: An Empirical Study in Japanese Companies.....	105
5.1 Introduction.....	105
5.2 Research Methods.....	107
5.2.1 Structural Model and Hypotheses.....	107
5.2.2 Outline of the Measurement Model.....	109
5.2.3 Outline of the Survey.....	111
5.3 Derivation of Primary Indicators and Confirmation of Structural Model.....	112
5.3.1 Process of Measuring Indicators.....	112
5.3.2 Results of Hypotheses Testing for the Structural Model.....	113
5.3.3 Conclusions of the Analyses.....	117
5.4 Derivation of Overall Performance Measures.....	118
5.5 Conclusions and Future Work.....	120
References.....	121
 6 Social Research on IT Management Innovation Towards Service Science and Science for Society.....	 123
6.1 Introduction.....	123
6.2 Design of Social Research Scheme for IT Management.....	128
6.3 Methods.....	130
6.4 Benefits from the New Social Research Scheme.....	132
6.5 Conclusions and Future Work.....	133
References.....	133
 7 Agent-Based Modeling of the Software Industry Structure in Japan: Preliminary Consideration of the Influence of Offshoring in China.....	 135
7.1 Introduction.....	135
7.2 Objectives and Method.....	136
7.3 Simulation Model.....	137
7.3.1 Agents and Parameters.....	137
7.3.2 Algorithm.....	137
7.3.3 Simulation Conditions and Parameters.....	138
7.4 Results.....	139
7.5 Conclusions and Discussion.....	142
References.....	144
 Part III Epilogue	
 8 A Hybrid Method to Predict Scenarios in the Japanese Software Industry.....	 147
8.1 Introduction.....	147
8.2 Large-Scale Fact-Finding Surveys on Software Engineering Capabilities in Japan.....	148

8.3	Results of Statistical Analyses of Relationship Between Software Engineering Capabilities and Business Performance	149
8.4	New Research Framework to Predict Future Scenarios.....	150
8.5	Conclusions and Future Work	151
	References	153
	Appendix: Results on Software Engineering Survey.....	155
	Index.....	169



<http://www.springer.com/978-4-431-55611-4>

Management of Software Engineering Innovation in
Japan

Kadono, Y.

2015, XIII, 173 p., Hardcover

ISBN: 978-4-431-55611-4