

Contents

Figures	13
Tables	17
Abbreviations.....	21
Part A	23
1 Introduction	25
1.1 Motivation for Inter-Organizational Data Sharing	25
1.2 Research Context and Research Questions	28
1.3 Research Structure.....	32
1.3.1 Included Publications of the Dissertation.....	33
1.3.2 Complete Bibliography	35
2 Research Background.....	37
2.1 The Origin of Data.....	37
2.2 Data Sharing, Information Sharing, and Knowledge Sharing.....	38
2.3 Supply Chain Data Sharing	40
2.4 From Bilateral to Multilateral Data Sharing.....	41
2.5 Data Ecosystems.....	45
2.6 Short Summary and Transition to the Next Section.....	48
3 Theoretical Foundations	51
3.1 Actor-Network Theory	52
3.2 Privacy Calculus Theory	53
3.3 Social Exchange Theory.....	54
3.4 Short Summary and Transition to the Next Section.....	56
4 Research Methodology.....	57
4.1 Literature Review	57
4.2 Interview Study	59
4.3 Workshops.....	63
4.4 Short Summary and Transition to the Next Section.....	65
Part B	67
5 Paper 1: Data Sharing Fundamentals: Definition and Characteristics	69
5.1 Introduction	70
5.2 Data Sharing.....	71

5.3	Literature Review.....	72
5.4	Findings.....	74
5.4.1	Definition of Data Sharing.....	74
5.4.2	Characteristics of Data Sharing.....	75
5.4.3	Definition of Data Exchange.....	78
5.4.4	Aligning Data Sharing und Data Exchange	79
5.5	Discussion	81
5.6	Contributions, Limitations, Outlook	82
6	Paper 2: Industrial Data Ecosystems and Data Spaces	85
6.1	Introduction.....	86
6.2	From Data Sharing to Data Spaces	89
6.2.1	Supply Chain Data Sharing.....	89
6.2.2	Industrial Data Ecosystems.....	91
6.2.3	Data Sharing Infrastructure.....	92
6.3	Data Space-Enabled Data Ecosystems.....	96
6.3.1	Data Spaces in Data Ecosystems	96
6.3.2	Data (Spaces) Initiatives in Practice	100
6.4	Research Opportunities for IS Research	102
6.4.1	Data Spaces for Organizational Boundary Spanning.....	104
6.4.2	Data Spaces for Generativity	105
6.4.3	Data Spaces for Organizational Infrastructure.....	106
6.5	Conclusion	107
7	Paper 3: Issues in inter-organizational Data Sharing: Findings from Research and Practice.....	109
7.1	Introduction.....	110
7.2	Background	112
7.2.1	Data Sharing.....	112
7.2.2	Actor-Network Theory to Conceptualize Data Sharing.....	114
7.3	Method	116
7.3.1	Data Collection	117
7.3.2	Data Analysis	118
7.4	Findings: Issues in Inter-Organizational Data Sharing.....	120
7.4.1	Problematization: Which problems does data sharing solve?.....	121
7.4.2	Intéressement: What is needed to motivate and realize data sharing?.....	122
7.4.3	Enrolment: How to operationalize data sharing?.....	127
7.4.4	Mobilization: How is data sharing implemented and established?.....	131
7.4.5	Spokesperson: Who promotes the initiative?.....	132
7.5	Reflecting on Our Findings: Challenges for Future Research in Data Sharing and Data Ecosystems	132

7.6	Contributions, Limitations, and Outlook.....	135
7.7	Appendix	137
8	Paper 4: Tensions in inter-organizational Data Sharing: Findings from Literature and Practice.....	141
8.1	Introduction	142
8.2	Theoretical Background	144
8.2.1	Data Sharing	144
8.2.2	Tensions, Incentives, and Barriers.....	145
8.3	Research Design	146
8.3.1	Phase 1: Extracting Incentives, Barriers and Tensions from the Literature Corpus.....	147
8.3.2	Phase 2: Collecting and Reaffirming Incentives, Barriers and Tensions from an Interview Study.....	148
8.3.3	Phase 3: Finalizing Tensions of Inter-Organizational Data Sharing in a Workshop Series.....	149
8.4	Findings: Tensions in Inter-Organizational Data Sharing.....	150
8.4.1	Incentives of Inter-Organizational Data Sharing.....	150
8.4.2	Barriers to Inter-Organizational Data Sharing.....	152
8.4.3	Tensions in Inter-Organizational Data Sharing.....	154
8.5	Contributions, Limitations and Outlook.....	160
9	Paper 5: To Share or not to Share – Exploring the Willingness of Industrial Data Providers to Share Data	163
9.1	Introduction	164
9.2	Background.....	166
9.2.1	Inter-organizational data sharing and data ecosystems	166
9.2.2	Conceptualizing Data Sharing with Social Exchange Theory.....	166
9.3	Methodology.....	168
9.3.1	Data Collection	168
9.3.2	Data Analysis.....	170
9.4	Findings	173
9.4.1	The (in-)tangible nature of data-sharing benefits complicates pinpointing its value	173
9.4.1.1	Tangible Benefits provide measurable added value on an organizational level	174
9.4.1.2	How intangible benefits provide strategic value on an ecosystem level	175
9.4.2	Immediate data sharing costs hinder the willingness to share data	176
9.4.3	Perceived reciprocity – fairness – is a fundamental pillar for data sharing	177
9.4.4	Perceived trust in the data user is the basis for sharing data	178
9.4.4.1	Trust-inhibiting antecedents hinder the willingness to share data.....	178
9.4.4.2	Trust-building antecedents foster the willingness to share data	179

9.5	Conceptualizing data provider’s willingness to share data as a balancing act between perceived reciprocity and perceived data-sharing trust	182
9.6	Conclusion, Limitations and Outlook	185
9.7	Appendix.....	187
Appendix A	Structured literature review	187
Appendix B	Initial interview guide	189
10	Paper 6: Stuck in the Middle with You: Conceptualizing Data Intermediaries and Data Intermediation Services	191
10.1	Introduction.....	192
10.2	Data Intermediaries	195
10.3	Research Design.....	198
10.3.1	Taxonomy Development.....	198
10.3.2	Clustering Data Intermediation Services	204
10.4	Findings: Conceptualizing Data Intermediation Services.....	205
10.4.1	Understanding Data Intermediation Services	205
10.4.2	The Connection between DIs and DISs	207
10.4.3	Patterns of Data Intermediation Services.....	208
10.5	Demonstration and Evaluation.....	216
10.6	Discussion	219
10.6.1	Data Intermediation Services and the DGA.....	219
10.6.2	Distribution of the Patterns	220
10.6.3	Specimen in each Cluster	222
10.6.4	DISs, Data Ecosystems and the Data Economy in the EU	223
10.7	Conclusions, Limitations and Outlook	224
10.8	Appendix.....	226
11	Paper 7: Reaching for the stars: Exploring Value Constellations in inter-organizational Data Sharing.....	241
11.1	Introduction.....	242
11.2	Background	244
11.2.1	Inter-Organizational Data Sharing and Value Constellations.....	244
11.2.2	Business Value and e ³ -value Modeling.....	245
11.3	Research Design.....	246
11.4	Findings: Data Sharing Value Constellations	248
11.5	Peer-to-peer Data Sharing.....	249
11.5.1	Constellation 1: Bilateral Data Sharing	249
11.5.2	Constellation 2: Service-Oriented Data Sharing.....	251
11.6	Intermediary-based Data Sharing.....	252
11.6.1	Constellation 3: Data Sharing through Marketplaces	252

11.6.2	Constellation 4: Data Sharing through Data Trusts.....	254
11.6.3	Constellation 5: Data Sharing through Data Platforms	255
11.6.4	Constellation 6: Data Sharing through Data Spaces.....	256
11.7	Lessons Learned	257
11.8	Contributions, Limitations, and Further Research.....	258
12	Paper 8: Strategic Decision Support for Inter-Organizational Data Sharing	261
12.1	Introduction	262
12.2	Foundations	264
12.2.1	Data Ecosystems and Inter-Organizational Data Sharing	264
12.2.2	Modes of Inter-Organizational Data Sharing	266
12.2.3	Decision Support for Inter-Organizational Data Sharing	267
12.3	Research Design	268
12.3.1	Phase 1: Problem Identification & Project Planning	270
12.3.2	Phase 2: Extracting Value Constellations and Designing the Decision Support Tool for Inter-Organizational Data Sharing.....	271
12.4	Exploring Value Constellation in Inter-Organizational Data Sharing.....	273
12.4.1	Modeling and Morphological Description	273
12.4.2	Morphological Description of Data Sharing Value Constellations.....	275
12.4.3	Interim Evaluation	278
12.5	Designing the Decision Support Tool	278
12.5.1	Module 1: Problem Space Exploration.....	279
12.5.2	Module 2: Solution Proposal	280
12.5.3	Module 3: Solution Configuration.....	282
12.6	Evaluation and Demonstration	283
12.6.1	Evaluation.....	283
12.6.2	Demonstration	285
12.7	Discussion.....	288
12.8	Contributions, Limitations, and Research Opportunities	289
12.8.1	Theoretical Contributions	289
12.8.2	Managerial Contributions	290
12.8.3	Limitations and Research Opportunities	290
12.9	Appendix	292
13	Conclusion.....	309
13.1	Contributions to Theory	309
13.2	Contributions to Practice	313
13.3	Limitations.....	316
13.4	Outlook on Future Research	317

13.5	Conclusion	319
14	References	321
15	Appendix	365
A.1	Interview guide interview study 1	365
A.2	Interview study 1 – Detailed overview of the selected interview partners .	367
A.3	Interview study 2 – Detailed overview of the selected interview partners .	368