

Overview of Contents

Acknowledgements	VII
Abstract.....	IX
Abstract (German).....	XI
Overview of Contents.....	XV
Table of Contents	XVII
List of Figures	XXIII
List of Tables.....	XXV
List of Abbreviations.....	XXVII
1 Introduction.....	1
2 Research Background	15
3 Methodological Background and Research Design.....	55
4 Study I: Literature Review on Digital Business Models in Industry 4.0.....	85
5 Study II: Classification of Digital Business Models: Development of a Taxonomy	135
6 Study III: Configurations of Nonownership Business Models in the Manufacturing Industry.....	187
7 Synthesis and Reflection on the Research	243
References	257
Appendix A: Supplement to Study I	305
Appendix B: Supplement to Study II	317
Appendix C: Supplement to Study III.....	325

Table of Contents

Acknowledgements VII

Abstract.....IX

Abstract (German).....XI

Overview of Contents..... XV

Table of ContentsXVII

List of Figures XXIII

List of Tables..... XXV

List of Abbreviations.....XXVII

1 Introduction 1

1.1 Motivation..... 2

1.2 Research Focus 8

1.3 Structure..... 10

1.4 Bibliographic Notes 13

2 Research Background 15

2.1 Business Models 16

2.1.1 The Business Model Concept..... 16

2.1.2 Classification of Business Models 24

2.1.3 Business Model Configuration 30

2.2 Digital Business Models 33

2.3 Industry 4.0 39

2.4 Servitization 47

3 Methodological Background and Research Design..... 55

3.1 Paradigms and Methods in Information Systems Research 56

3.2 Introduction to Literature Reviews 60

3.3 Introduction to Taxonomy Development in the Light of Design
Science Research 65

3.4 Introduction to Case Study Research 72

3.5	Research Design	79
4	Study I: Literature Review on Digital Business Models in Industry 4.0.....	85
4.1	Study Objectives	86
4.2	Methodological Approach	87
4.2.1	Data Collection.....	87
4.2.2	Data Analysis	91
4.3	Results of the Descriptive Analysis.....	93
4.4	Results of the Content Analysis.....	106
4.4.1	Prerequisites (Antecedents).....	107
4.4.2	Design and Implementation Process (Antecedents).....	109
4.4.3	Influencing Factors (Antecedents)	111
4.4.4	Business Model Configuration (Business Model Structure).....	112
4.4.5	Business Model Typologies (Business Model Structure)	116
4.4.6	Business Model Taxonomies (Business Model Structure)	118
4.4.7	Enabled Business Models (Business Model Structure)	120
4.4.8	Business Model Maturity (Business Model Structure)	122
4.4.9	Challenges (Outcomes)	123
4.4.10	Benefits (Outcomes).....	125
4.4.11	Level of Realization (Outcomes)	125
4.5	Summary of Findings	126
4.6	Discussion of Limitations and Contributions	129
4.7	Conclusion	132
5	Study II: Classification of Digital Business Models: Development of a Taxonomy	135
5.1	Study Objectives	136
5.2	State of Research on the Classification of Digital Business Models ...	137
5.3	Methodological Approach	146
5.3.1	Data Collection.....	146
5.3.2	Taxonomy Development	148

5.3.3	Taxonomy Evaluation	150
5.4	Digital Business Model Taxonomy	152
5.4.1	Digital Offering (Value Proposition)	152
5.4.2	Digital Experience (Value Proposition)	155
5.4.3	Digital Platforms (Value Architecture/Network).....	156
5.4.4	Data Analytics (Value Architecture).....	158
5.4.5	Digital Pricing (Value Finance)	159
5.5	Evaluation of Digital Business Model Taxonomy	163
5.5.1	The Digital Business Model of Google Search	163
5.5.2	The Digital Business Model of CINE	165
5.5.3	The Digital Business Model of PHARM	166
5.5.4	The Digital Business Model of COMP	168
5.5.5	Comparison of Exemplary Digital Business Models.....	169
5.5.6	Concluding Evaluation	171
5.6	Discussion of Research Rigor.....	175
5.7	Discussion of Limitations and Contributions	181
5.8	Conclusion	185
6	Study III: Configurations of Nonownership Business Models in the Manufacturing Industry.....	187
6.1	Study Objectives.....	188
6.2	Theoretical Framing.....	189
6.2.1	Applied Business Model Taxonomy	190
6.2.2	Conceptualization of Influencing Factors	191
6.3	State of Research on Nonownership Business Model Configurations and Influencing Factors	195
6.3.1	Literature Review Approach	196
6.3.2	Nonownership Business Model Configurations.....	198
6.3.3	Influencing Factors.....	202
6.3.4	Summary and Analytical Framework	209

6.4	Methodological Approach	210
6.4.1	Selection of Case Companies	211
6.4.2	Data Collection	213
6.4.3	Data Analysis	215
6.5	Results of the Case Analysis	216
6.5.1	The Case of PRINT	216
6.5.2	The Case of ROB	220
6.5.3	The Case of COMP	222
6.5.4	Summary of Case-By-Case Analysis	225
6.6	Results of the Cross-Case Analysis and Theoretical Development	227
6.6.1	Baseline Configuration of Nonownership Business Models	227
6.6.2	Generic Configurational Considerations: Value Sources and Uncertainties.....	228
6.6.3	Firm-Specific Configurations of Nonownership Business Models	229
6.6.4	The Role of Machine Attributes.....	230
6.6.5	The Role of the Manufacturing Firm's Market Structure	232
6.6.6	The Role of the Manufacturing Firm's Legal Environment	232
6.6.7	Synthesis and Theoretical Model	233
6.7	Discussion of Research Rigor.....	234
6.8	Discussion of Limitations and Contributions	238
6.9	Conclusion	241
7	Synthesis and Reflection on the Research	243
7.1	Summary of Findings	244
7.2	Theoretical Contributions	246
7.3	Managerial Contributions	249
7.4	Limitations and Avenues for Future Research	251
7.5	Final Considerations	254
	References	257

Appendix A: Supplement to Study I 305

Appendix B: Supplement to Study II 317

Appendix C: Supplement to Study III..... 325