

Contents

- 1 Introduction 1**
 - 1.1 Motivation 1
 - 1.2 Research Questions and Objective of Research 2
 - 1.3 Course of Argumentation and Structure of the Thesis 5
- 2 Embedding the Topic into the Scientific Environment Based on a Comprehensive Literature Review 9**
 - 2.1 Supply Chain 9
 - 2.1.1 Definition of a Supply Chain 10
 - 2.1.2 Objective of a Supply Chain 12
 - 2.2 Supply Chain Management 13
 - 2.2.1 Concept of Collaboration 15
 - 2.2.2 Characteristics Supply Chain Management 20
 - 2.2.3 The Value Chain Approach 23
 - 2.2.4 Changes in the Business Environment 27
 - 2.3 Investment and Financing 30
 - 2.3.1 Types of Investments and Supply Chain Investments 31
 - 2.3.2 Criteria for Investment Decisions 34
 - 2.3.3 Financing Investments 35
 - 2.3.4 Conflict between Organizational and Supply Chain Perspective 39
 - 2.4 Supply Chain Finance 40
 - 2.4.1 Financial Risks as Part of Supply Chain Risk Management 41
 - 2.4.2 Classification and Objectives of Supply Chain Finance 44

2.5	Chapter Summary	50
3	Methodical Procedure According to a Problem-Centered Approach	53
3.1	Design Science Research	53
3.1.1	Types of Artifacts	56
3.1.2	Methodical Approach of Design Science Research	58
3.2	Problem Identification and Motivation	62
3.2.1	Practical Examples of Financing Investments in Supply Chains	63
3.2.2	Identified Problems and Opportunities from Practical Examples	74
3.3	Definition of the Objective of a Solution	78
3.3.1	Systematic Literature Review on Financing Investments in Supply Chains	78
3.3.2	Requirement and Objective of the Solution	105
3.4	Chapter Summary	108
4	Development of a Supply Chain Finance Model in Consideration of Cooperative Game Theory	111
4.1	Decision-Making Model for Decision Support	111
4.2	General Description of Game Theory	113
4.2.1	Cooperative Game Theory	116
4.2.2	Characteristic Function	117
4.2.3	Solution Concepts	120
4.3	Determination of the Disruption Risk and Financing Costs	126
4.3.1	The Merton Model	128
4.3.2	Critical Reflection of the Merton Model and Implication for the use in Supply Chains	132
4.4	Modeling the Collaborative Financing of a Supply Chain Investment based on a Coalition Game	135
4.4.1	Problem Description	136
4.4.2	Supply Chain Structure	140
4.4.3	Supply Chain Structure with Investment	143
4.4.4	The Collaborative Supply Chain Finance Model	145
4.4.5	Conceptual Overview of the Collaborative Supply Chain Finance Model	147
4.5	Chapter Summary	152

5	Demonstration and Evaluation of the Model and Considerations for Practical Applicability	155
5.1	Demonstration of the Collaborative Supply Chain Finance Model	155
5.1.1	Determination of Parameters and the Status Quo	158
5.1.2	Investment Opportunity and its Impact on the Supply Chain	162
5.1.3	Determination of the Coalition Members to Finance the Investment	164
5.1.4	Contribution-based Profit Allocation	167
5.2	Evaluation of the the Collaborative Supply Chain Finance Model	172
5.2.1	Evaluation of the Solution of the Model and Partial Sensitivity Analysis	172
5.2.2	Utility of the Collaborative Supply Chain Finance Model Depending on Scope and Purpose	193
5.3	Chapter Summary	199
6	Summary and Conclusion	201
	Bibliography	207