

# Table of Contents

|   |              |
|---|--------------|
| <b>Foreword</b>   | <b>V</b>     |
| <b>Acknowledgements</b>   | <b>VII</b>   |
| <b>List of Figures</b>  | <b>XVIII</b> |
| <b>List of Tables</b>   | <b>XIX</b>   |
| <b>List of Abbreviations</b>  | <b>XXI</b>   |
| <b>1 Introduction</b>   | <b>1</b>     |
| 1.1 Motivation and Goals of the Thesis . . . . .  | 1            |
| 1.2 Research Questions . . . . .  | 4            |
| 1.3 Structure of the Thesis . . . . .   | 4            |
| <b>2 Conceptual Framework: Remote Services in Context of Technology-Mediated Services</b> | <b>7</b>     |
| 2.1 Emerging Technology-Mediated Service Types . . . . .                                  | 7            |
| 2.1.1 E-Services . . . . .  | 7            |
| 2.1.2 Self-Services . . . . .   | 9            |
| 2.1.3 Mobile Services . . . . .   | 12           |
| 2.1.4 Industry Specific Technology-Mediated Services . . . . .                            | 13           |
| 2.1.4.1 Teleservices in Engineering and Manufacturing Industries . .                      | 13           |
| 2.1.4.2 Telematics in the Automotive Industry . . . . .                                   | 15           |
| 2.1.4.3 Telemedicine in Health Care . . . . .   | 16           |
| 2.1.4.4 Services in the IT-Sector . . . . .   | 18           |
| 2.2 Classification of Remote Services . . . . .   | 19           |
| 2.2.1 Definition of Remote Services . . . . .   | 19           |
| 2.2.2 Characteristics of Remote Services . . . . .  | 20           |
| 2.2.3 Benefits of Remote Services . . . . .   | 23           |
| 2.3 Classification of Interactive Remote Services . . . . .                               | 24           |
| 2.3.1 Definition of Interactive Remote Services . . . . .                                 | 24           |

|          |  |           |
|----------|--|-----------|
| 2.3.2    | Characterization and Demarcation of Interactive Remote Services . . .        | 25        |
| 2.3.3    | Positioning of Interactive Remote Services . . . . .                         | 26        |
| 2.4      | Conclusions and Implications . . . . .                                       | 29        |
| <b>3</b> | <b>Theoretical Framework for Remote Service Adoption and Continued Usage</b> | <b>31</b> |
| 3.1      | Theoretical Foundations of Technology Adoption . . . . .                     | 31        |
| 3.1.1    | Behavioral Theories from Social Psychology and Sociology . . . . .           | 32        |
| 3.1.1.1  | Innovation Diffusion Theory and Variants . . . . .                           | 32        |
| 3.1.1.2  | The Theory of Reasoned Action and Variants . . . . .                         | 34        |
| 3.1.1.3  | The Theory of Planned Behavior and Variants . . . . .                        | 36        |
| 3.1.1.4  | The Decomposed Theory of Planned Behavior . . . . .                          | 37        |
| 3.1.2    | Models in IT-Adoption Based on Behavioral Theories . . . . .                 | 39        |
| 3.1.2.1  | The Technology Acceptance Model and Variants . . . . .                       | 39        |
| 3.1.2.2  | The Motivational Model and Variants . . . . .                                | 41        |
| 3.1.2.3  | The Unified Theory of Acceptance and Use of Technology . . . . .             | 42        |
| 3.1.2.4  | Compeau and Higgins' Model based on Social Cognitive Theory . . . . .        | 44        |
| 3.1.3    | Theoretical Foundations of Continued Use of Technology . . . . .             | 45        |
| 3.1.3.1  | Importance of Prior Experience . . . . .                                     | 45        |
| 3.1.3.2  | Studies On Continued Usage . . . . .   | 46        |
| 3.1.3.3  | Comparison of Adoption and Continuance Drivers . . . . .                     | 48        |
| 3.1.4    | Summary and Overview of Models in Technology Adoption . . . . .              | 50        |
| 3.2      | Theoretical Foundations of Interaction in the Service Encounter . . . . .    | 58        |
| 3.2.1    | Perceptions of Service Providers' Employee Behavior . . . . .                | 58        |
| 3.2.1.1  | Importance of Employee Behavior in the Service Encounter . . . . .           | 58        |
| 3.2.1.2  | Customer Orientation of Employees . . . . .                                  | 60        |
| 3.2.1.3  | Role of Employee Behavior in Service Quality Assessments . . . . .           | 60        |
| 3.2.1.4  | Employee Behavior in Technology-Mediated Service Encounters . . . . .        | 62        |
| 3.2.2    | Customer Integration in the Service Process . . . . .                        | 65        |
| 3.2.2.1  | Research on Customer Co-Production . . . . .                                 | 65        |
| 3.2.2.2  | Drivers of Customer Co-Production . . . . .                                  | 66        |
| 3.2.3    | Customer Beliefs Regarding the Interaction with Service Technology . . . . . | 69        |
| 3.2.3.1  | Consumer Readiness as Driver of Technology-Mediated Co-Production . . . . .  | 69        |
| 3.2.3.2  | Technology Readiness as a Driver of Technology Usage in Services . . . . .   | 69        |
| 3.3      | Transcending Concepts of Trust and Control across Disciplines . . . . .      | 71        |
| 3.3.1    | Importance of Trust and Trustworthiness . . . . .                            | 71        |
| 3.3.2    | Importance of Control Beliefs . . . . .                                      | 73        |

|          |   |           |
|----------|---|-----------|
| 3.3.3    | The Trust-Control Nexus . . . . .   | 75        |
| 3.4      | Technology-Intensive Service Adoption in B2B contexts . . . . .             | 77        |
| 3.4.1    | Business Service Relationships . . . . .                                    | 77        |
| 3.4.2    | Decision Making and the Adoption Process in Organizations . . . . .         | 78        |
| 3.4.3    | Organizational Adoption Drivers . . . . .                                   | 81        |
| 3.5      | Summary of the Theoretical Foundations of Remote Services . . . . .         | 82        |
| <b>4</b> | <b>Methodological Superstructure and Empirical Setting</b>                  | <b>85</b> |
| 4.1      | Methodological Superstructure . . . . .                                     | 85        |
| 4.2      | Empirical Setting of the Employed Studies . . . . .                         | 87        |
| 4.2.1    | Selection of the Printing Industry . . . . .                                | 87        |
| 4.2.2    | Printing Machine Manufacturing . . . . .                                    | 88        |
| 4.2.3    | The Printing Industry . . . . .   | 89        |
| <b>5</b> | <b>Qualitative Exploratory Interview Study</b>                              | <b>93</b> |
| 5.1      | Motivation and Goals . . . . .  | 93        |
| 5.2      | Qualitative Research Methodology . . . . .                                  | 94        |
| 5.2.1    | Semi-Structured Interviews as Means of Data Collection . . . . .            | 94        |
| 5.2.2    | Qualitative Content Analysis as Means of Data Analysis . . . . .            | 94        |
| 5.2.3    | Validity and Reliability . . . . .  | 95        |
| 5.3      | Field Phase . . . . .   | 97        |
| 5.3.1    | Sample Selection . . . . .  | 97        |
| 5.3.2    | Interview Situation and Questionnaire Design . . . . .                      | 102       |
| 5.3.3    | Category Development and Coding . . . . .                                   | 105       |
| 5.4      | Results of the Qualitative Interview Study . . . . .                        | 105       |
| 5.4.1    | Assessment of Intercode Reliability . . . . .                               | 105       |
| 5.4.2    | Structure of Results Presentation . . . . .                                 | 106       |
| 5.4.3    | Technology Beliefs . . . . .  | 107       |
| 5.4.4    | Relational Beliefs . . . . .  | 110       |
| 5.4.4.1  | Trust in the Remote Service Technician . . . . .                            | 110       |
| 5.4.4.2  | Trust in the Remote Service Provider Company . . . . .                      | 113       |
| 5.4.5    | Process Control Beliefs . . . . .   | 114       |
| 5.4.6    | Economic Values . . . . .   | 117       |
| 5.4.7    | Participation Beliefs . . . . .   | 120       |
| 5.4.8    | Cultural Differences in the Customer's Willingness to Collaborate . . . . . | 122       |
| 5.4.9    | Prior Experiences . . . . .   | 123       |
| 5.4.10   | Organizational Factors . . . . .  | 124       |
| 5.4.11   | Contextual Factors . . . . .  | 126       |
| 5.4.12   | Discussion of the Results . . . . .   | 127       |

|          |  |            |
|----------|--|------------|
| <b>6</b> | <b>Hypotheses Development</b>                          | <b>131</b> |
| 6.1      | Development of the ITSUM                               | 131        |
| 6.1.1    | Counterpart Beliefs                                    | 132        |
| 6.1.1.1  | Controllability of the Counterpart's Actions           | 132        |
| 6.1.1.2  | Trustworthiness of the Counterpart                     | 134        |
| 6.1.2    | Technology Beliefs                                     | 136        |
| 6.1.2.1  | Trust in Technology                                    | 136        |
| 6.1.2.2  | Ease of Use  | 136        |
| 6.1.3    | Perceived Usefulness                                   | 137        |
| 6.1.4    | Participation Beliefs                                  | 139        |
| 6.1.4.1  | Role Clarity   | 139        |
| 6.1.4.2  | Role Ability   | 140        |
| 6.1.4.3  | Intrinsic Motivation                                   | 140        |
| 6.1.5    | Organizational Characteristics                         | 141        |
| 6.1.5.1  | Subjective Norms                                       | 141        |
| 6.1.5.2  | Company Size and Respondent's Function                 | 142        |
| 6.2      | Link Between Usage Intention and Actual Usage Behavior | 143        |
| 6.3      | Hypotheses Development for Group Comparisons           | 143        |
| <b>7</b> | <b>Quantitative Studies</b>                            | <b>149</b> |
| 7.1      | Motivation and Goals                                   | 149        |
| 7.2      | Methods and Techniques Employed                        | 150        |
| 7.2.1    | Survey Research  | 150        |
| 7.2.2    | Structural Equation Modeling                           | 151        |
| 7.2.2.1  | Methodology  | 151        |
| 7.2.2.2  | Assessment of Reliability and Validity                 | 153        |
| 7.2.2.3  | Assessment of Model Fit and Data Quality               | 154        |
| 7.2.2.4  | Dependent Categorical Variables                        | 156        |
| 7.2.2.5  | Multi-Group Comparison                                 | 156        |
| 7.3      | Study Design   | 159        |
| 7.4      | General Outline of the Questionnaires                  | 160        |
| 7.5      | Operationalization of the Constructs                   | 161        |
| 7.6      | Quality of the Questionnaire and Pre-Test              | 166        |
| 7.7      | t <sub>1</sub> -Study: Results of ITSUM Validation     | 167        |
| 7.7.1    | Sample Structure and Description                       | 167        |
| 7.7.2    | Data Quality   | 170        |
| 7.7.3    | Measurement Validity                                   | 171        |
| 7.7.4    | Assessing Common Method Variance                       | 174        |
| 7.7.5    | Validation of the ITSUM (n=717)                        | 175        |
| 7.8      | Multi-Group Comparison: Adoption vs. Continued Usage   | 178        |

|          |   |            |
|----------|---|------------|
| 7.8.1    | Description of the Groups . . . . .   | 178        |
| 7.8.2    | Assessing Measurement Invariance . . . . .  | 179        |
| 7.8.3    | Results for Organizations in the Pre-Adoption Phase . . . . .                       | 184        |
| 7.8.4    | Results for Organizations in the Continued Usage Phase . . . . .                    | 186        |
| 7.8.5    | Comparison of Group Parameters . . . . .  | 189        |
| 7.9      | t <sub>2</sub> -Study: Intention - Behavior Link . . . . .                          | 192        |
| 7.9.1    | Sample Description . . . . .  | 192        |
| 7.9.2    | Logistic Regression Results . . . . .   | 194        |
| 7.10     | Discussion of the Results . . . . .   | 196        |
| <b>8</b> | <b>Summary and Conclusions</b>  | <b>201</b> |
| 8.1      | Summary of the Central Results . . . . .  | 201        |
| 8.2      | Managerial Implications . . . . .   | 203        |
| 8.3      | Implications for Future Research . . . . .  | 206        |
|          | <b>References</b>   | <b>209</b> |
| <b>A</b> | <b>Additional Tables and Figures</b>  | <b>255</b> |
| A.1      | Interview Guideline of the Exploratory Qualitative Study . . . . .                  | 255        |
| A.2      | First Pages of the Online Survey t <sub>1</sub> and t <sub>2</sub> -study . . . . . | 257        |
| A.3      | Exploratory Factor Analysis Results . . . . .                                       | 259        |
| A.4      | Correlations . . . . .  | 260        |
| A.5      | Calculation of Moderating Effects . . . . .   | 261        |