

Service Provisions and Business Relationships in the Digital Era

Four Essays in the B2B Context

Dissertation Submitted to Attain the Degree of

Doctor rerum politicarum (Dr. rer. pol.)

at the School of Business, Economics, and Information Systems
of the University of Passau

Submitted by: Torben Stoffer, M.Sc.
First Reviewer: Prof. Dr. Thomas Widjaja
Second Reviewer: Prof. Dr. Nicolas Zacharias

May 2019



Accepted as Dissertation

at the School of Business, Economics and Information Systems of the University of Passau

Date of the Disputation: October 8, 2019

Chair of the Examining Committee: Prof. Dr. Franz Lehner

First Reviewer: Prof. Dr. Thomas Widjaja

Second Reviewer: Prof. Dr. Nicolas Zacharias

Abstract

Digitalization has fundamentally changed how services are provided and how service providers and their customers interact with each other in the business-to-business (B2B) context. Against the backdrop of these developments, this thesis considers – in four essays – the changes brought about by both service and sales digitalization. Each essay investigates for one research topic the aspects of existing knowledge regarding non-digital services and/or sales which can be transferred to digital services and sales and which aspects must be adjusted. The aim is to support B2B firms that offer or receive services or plan to do so in the future which cope with the challenges of service and sales digitalization.

In doing so, the first and second essay investigate the contingency effect of service digitalization on service characteristics from the provider and customer views, respectively. Both essays aim at explaining service value as an endogenous variable. In the first essay, service modularity and service flexibility are considered as predecessors that help explain service value. The second essay investigates the effect of customer cocreation on service value. Whereas the first and second essay focus on service characteristics, the third and fourth essay focus on business relationships. Both essays explain relational conflict, one important facet of business relationships, as the endogenous variable and consider the perspectives of both providers and customers. The third essay elaborates on the diverging effect of service digitalization on relational conflict from these two perspectives. The fourth essay incorporates both service and sales digitalization and investigates the contingency effects of the two forms of digitalization on the relationship between coercive power use and relational conflict.

In conclusion, this thesis provides a more fine-grained view on the construct *digitalization* by differentiating explicitly between *service digitalization* and *sales digitalization* and introduces a new conceptualization of service (see all four essays) and sales digitalization (see the fourth essay) by treating digitalization as a continuum. Furthermore, this thesis investigates the opportunities and challenges brought about by digitalization. In particular, the first and second essays show the opportunities service digitalization creates for providers, who could benefit from service modularity, and customers, who could benefit from the integration of their own resources into service provisions. In addition, the third essay shows that for providers service digitalization has a positive and for customers contrarily a negative effect on relation conflict. The fourth essay shows that sales and service digitalization positively moderate the effect of coercive power use on relational conflict for weaker parties in business relationships (except for weaker providers) but not for stronger parties. In sum, this thesis contributes to a better understanding of the consequences of service and sales digitalization and provides recommendations for companies facing challenges and decisions related to this development.

Acknowledgements

First and foremost, I want to deeply thank Prof. Dr. Thomas Widjaja who has done an outstanding job in guiding, supervising, and advising me over the past years we mutually spent in Darmstadt and Passau. I particularly appreciate that you created a working environment that was instructive, challenging, encouraging, and fun at the same time. I count myself extremely lucky to have you as a mentor and am even more grateful that you have become a dear friend. Moreover, I would like to thank Prof. Dr. Nicolas Zacharias and Prof. Dr. Franz Lehner for the ongoing support throughout all stages of my dissertation as well as for being the second examiner of my dissertation and the chairperson of my examining committee, respectively.

My special gratitude goes to all my colleagues and friends at the University of Passau, who made the time in Passau so worthwhile and unforgettable. In particular, I want to gratefully thank Ferdinand for mastering the challenge to collect two samples in the B2B context with me, Uschi for her passionate support in the everyday office life, Oliver for the countless hours dedicated to mutual sport activities, Andy for the various leisure activities, and Andrea, Tobias, as well as Tobias for being so great colleagues at our chair. Furthermore, I thank Jan and his team for giving me a second home during numerous lunch breaks and evening activities.

Finally, I thank those people without whom this thesis would not have been possible. I especially thank my parents Ellen and Uwe, my sister Birte, as well as my godmother Angelika. They have given me a light-hearted childhood as well as an excellent education and have supported me throughout my life with unlimited love and patience. In addition, I thank Thiemo for the decades of deep friendship and professional exchange. Last but not least, my sincere thanks go to my partner Gloria who has given me caring love, unconditional support, and comic relief and has accepted the times when I was not in the best mood, especially when results did not turn out as they should have. You have shown me how beautiful the little things and, especially, pets in life are. I owe all of you more than I could ever express in writing!

Contents

Introduction	1
Motivation and Overall Research Aims.....	1
Main Concepts	3
Research Methods	4
Summaries of the Four Essays and How They Are Related	5
Overall Discussion	13
Funding	15
References.....	16
The Effect of Service Modularity on Flexibility in the Digital Age – An Investigation in the B2B Context	23
Introduction.....	24
Conceptual Background.....	26
Research Model and Hypotheses Development.....	27
Methodology	28
Results.....	29
Discussion, Limitations, and Future Research.....	30
Appendix.....	33
References.....	34
Leveraging the Value of Cocreation during Service Provisions through Digitalization – An Empirical Investigation in the B2B Context.....	37
Introduction.....	38
Theoretical Background.....	40
Research Model and Hypotheses Development.....	41
Methodology	42
Discussion, Limitations, and Future Research.....	45
Appendix.....	47
References.....	49
The Diverging Effect of Digitalization on Perceived Relational Conflict during Service Provisions – An Empirical Comparison of Suppliers and Customers in the B2B Context.....	53
Introduction.....	54

Conceptual Background.....	56
Research Model and Hypotheses Development.....	56
Methodology	57
Results	58
Discussion, Limitations, and Future Research.....	60
References.....	61
The Dark Side of Sales and Service Digitalization: Do They Amplify the Impact of Coercive Power Use on Relational Conflict in B2B Relationships?.....	63
Introduction.....	65
Research Model and Hypotheses Development.....	67
Research Method.....	71
Results	73
Discussion	77
Appendix.....	81
References.....	96

Introduction

Motivation and Overall Research Aims

In the last decade, offering services and managing the corresponding business relationships have become vital to the success of providers in the business-to-business (B2B) market. For example, IBM's share of revenues in the service segment increased from 40% in 2008 to 64% in 2018 to account for nearly two-thirds of IBM's total revenues (IBM 2009; IBM 2019). This shift is also reflected in IBM's conception of itself, which has changed from a company offering only maintenance services for its software and hardware to one offering outsourcing and information technology (IT) integration services (Spohrer 2016). The literature identified the importance of services some time ago and has acknowledged the opportunities for information systems (IS) scholars to make novel contributions in the domain of services (Barrett et al. 2015; Rai and Sambamurthy 2006).

Digitalization has fundamentally changed how services are provided and how service providers and their customers interact with each other in the B2B context (e.g., Barrett et al. 2015; Lässig et al. 2015; World Economic Forum 2017). This thesis considers the changes brought about by both service and sales digitalization. Worldwide revenues from digital B2B services have risen by 22% during the last ten years and are expected to hit \$1 trillion for the first time in 2019 (Gartner 2009; Gartner 2019). Global revenues generated by digital sales in B2B relationships are expected to account for about half of all B2B revenues by the end of this year (Accenture 2018). Hence, both forms of digitalization are of increasing importance for companies in the B2B context. One example of the increase resulting from digitalization is the "McKinsey Solutions" offered by the consulting company McKinsey. These services, once sold and provided non-digitally by McKinsey's salespersons and consultants, are now provided digitally as customer self-services and are offered online (McKinsey 2019).

Both services and business relationships in the B2B context differ substantially from their counterparts in the business-to-consumer (B2C) context, suggesting the need for research that looks explicitly at the former. B2B services are more complex and far more customized (Catlin et al. 2016; Lichtenthal and Mummalaneni 2009). B2B business relationships are typically closer and characterized by more personal interactions (Stock and Zacharias 2013). The sales processes for B2B salespersons are also more complex, due in part to longer deal cycles and lengthier decision processes that involve many decision makers and influencers (Accenture 2018; Catlin et al. 2016). Hence, insights and practices from the B2C context (e.g., Scherer et al. 2015; Srivastava and Shainesh 2015) cannot be transferred to the B2B context without adjustments, which requires research focusing specifically on B2B. In practice, B2B firms lag behind B2C firms in terms of their overall digital maturity (Catlin et al. 2016). Timotheus Höttges, CEO of Deutsche Telekom AG, acknowledges this when he says that companies have developed mainly digital B2C services and that there are still all opportunities to develop the more complex digital B2B services (Di Lorenzo 2016).

This thesis builds on four essays, each of which investigates one research topic. For each topic, the essay investigates the aspects of existing knowledge regarding non-digital services and/or sales which can be transferred to digital services and sales and which aspects must be adjusted. The aim

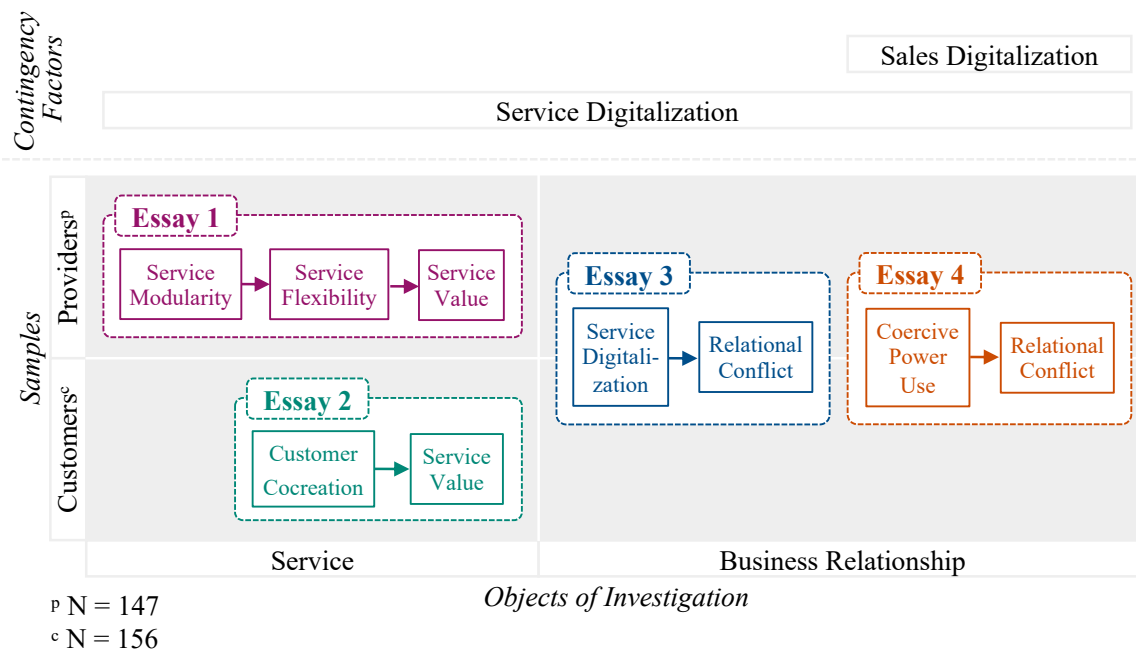


Figure 1: Classification of the thesis's essays according to objects of investigation, contingency factors, and samples employed.

is to support B2B firms that offer or receive services or plan to do so in the future which cope with the challenges of service and sales digitalization. The results presented in each essay contribute to the overall aim by shedding light on the influence of service and sales digitalization on service provisions, sales, and business relationships in the B2B context.

The literature has treated both forms of digitalization, service and sales, primarily as a binary concept by considering only non-digital and/or digital services and sales processes (e.g., Gorla et al. 2017; Paluch and Wunderlich 2016; Scherer et al. 2015). Hence, literature has not considered services or sales processes comprising both non-digital and digital components. However, both service and sales digitalization also exist in intermediate forms in practice (e.g., 81% of services and 78% of sales processes considered in this thesis consist, to a large extent, of digital as well as non-digital components, which makes it inappropriate to classify them as either digital or non-digital). Hence, this thesis proposes and applies a new conceptualization of service and sales digitalization that considers them as a continuum.

This dissertation was created as part of the research project “Adoption of Innovative IT Services in the B2B Context” funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation). The project work was divided among multiple parties; this thesis focuses on the changes brought about by service digitalization (addressed in all four essays) and only touches on the changes brought about by sales digitalization (addressed in one essay). Figure 1 classifies the four essays with respect to the contingency factors (service and/or sales digitalization) incorporated and the object of investigation (service or business relationship) analyzed. The figure also indicates which perspective (providers, customers, or both) the essays consider with respect to business relationships in the B2B context; as the literature has shown that relationship characteristics are perceived differently by

providers and customers (e.g., Lee and Johnsen 2012; Paluch and Wunderlich 2016). The three dimensions are explained further in the following section.

Main Concepts

Service, the first object of investigation, is defined as the process of using one's resources for the benefit of another entity (Vargo and Lusch 2008). This definition is in line with the Service-Dominant (S-D) logic, which is a theoretical lens focusing explicitly on service (Lusch and Nambisan 2015; Vargo and Lusch 2004a; Vargo and Lusch 2004b; Vargo and Lusch 2016; Vargo and Lusch 2017). S-D logic has emerged and gained momentum over the last years and has also been incorporated into the IS literature (e.g., Peters et al. 2015; Scherer et al. 2015; Srivastava and Shainesh 2015). S-D logic interprets service as the central concept in every exchange and competition, rendering superfluous the traditional separation of services and goods (Lusch et al. 2007). While this thesis incorporates S-D logic's service definition, the services considered herein are not in conflict with traditional views of services, which distinguish services from goods by the properties *intangibility*, *heterogeneity*, *inseparability*, and *perishability* (Vargo and Lusch 2004b).

The consideration of *business relationships*, the second object of investigation in this thesis, is also in line with S-D logic, which emphasizes the importance of the interaction orientation and relational orientation between actors involved in service provisions (i.e., providers and customers; Vargo and Lusch 2008). The business relationships in this thesis are investigated at the micro level of actor-to-actor interactions (i.e., interactions between provider and customer; Lusch and Vargo 2014). Nevertheless, the understanding of business relationships here is not in line with S-D logic in all facets. Business relationships in S-D logic are considered as emergent and temporal value creation processes (Vargo 2009). One focus of this thesis is that business relationship characteristics (i.e., relational conflict), which are based on trust as well as commitment, evolve over time and are considered to be long term. Hence, in contrast to S-D logic's view regarding business relationships characteristics, this thesis follows the view taken by traditional marketing research (Palmatier et al. 2007).

The two contingency factors *service* and *sales digitalization* are based on the conceptualizations of Böhmman et al. (2003) and Froehle and Roth (2004). *Service digitalization* and *sales digitalization* are defined as the degree to which services and sales, respectively, are performed by IT rather than personnel. Based on this understanding of digitalization, this thesis includes services and sales with degrees of digitalization ranging from very *low* (e.g., consultants interviewing personnel to evaluate their ability to detect phishing mails; sales at trade fairs) to very *high* (e.g., the evaluation of personnel's ability to detect phishing mails via an online survey; sales via an online shop). As stated above, by treating digitalization as a continuum these conceptualizations differ fundamentally from approaches in the literature to date, which treat both forms of digitalization as a binary concept by considering only non-digital and/or digital services and sales processes (e.g., Gorla et al. 2017; Paluch and Wunderlich 2016; Scherer et al. 2015). Focusing on the resources being integrated into service provisions is also in line with S-D logic, which emphasizes the integration of resources by all actors during service provisions (Vargo and Lusch 2008; Vargo and Lusch 2017). In addition, conceptualizations in the context of S-D logic consider, among others, technology (i.e., IT) and people as resources that can be integrated into service provisions (Maglio and Spohrer 2008). While

this thesis introduces a novel conceptualization of sales and service digitalization, it focuses mainly on service digitalization as explained above. The four essays also reflect this focus, as they all incorporate service digitalization and only one discusses sales digitalization (see Figure 1).

Research Methods

To sharpen the research questions in the essays, a number of comprehensive literature reviews were conducted that followed the recommendations of Webster and Watson (2002) as well as vom Brocke et al. (2015). These reviews were aimed, as a first step, at obtaining an overview of existing research about service and digitalization. The aim of a second step was to review more specifically the literature on the topics identified in the first step. This review included particular attention to the literature on modularization of services (see first essay), S-D logic with a focus on cocreation (see second essay), conflict in business relationships (see third and fourth essays), and power use as well as procedural justice theory (see fourth essay). To sharpen the research questions and ensure their relevance for practice, 30 exploratory interviews were conducted with practitioners involved in the topic, following the guidelines of Myers and Newman (2007) and Yin (2013). These interviews, which took place between April 2016 and September 2017, confirmed the importance of modularization of digital services (relevant for the first essay; addressed in 11 interviews), the increasing awareness of customers becoming involved in service provisions (i.e., customer cocreation; relevant for the second essay; addressed in 11 interviews), the relevance of relationship quality (i.e., relational conflict; relevant for the third and fourth essays; addressed in all interviews), and the use of power in business relationships with unequal dependencies (relevant for the fourth essay; addressed in 22 interviews).

To answer the essay research questions and test the corresponding hypotheses resulting from the preliminary work, this thesis draws on data obtained via two online surveys conducted between September and December 2017. To account for the different views on business relationships as elaborated above, one survey was conducted among firms offering services in the context of information systems for businesses (providers). This survey targeted sales managers and employees from other departments involved in sales of the services. The other survey was conducted among firms receiving these services (customers) and targeted managers involved in the buying process.

Both surveys were created with the Questback Enterprise Feedback Suite. The surveys comprised well-established measures identified through a comprehensive literature review and, where necessary, modified to match the essay's context and the survey's target group (customers or providers). As the conceptualizations of service and sales digitalization are new, a new scale was developed by adapting the guidelines provided by MacKenzie et al. (2011). Both surveys were discussed and validated in interviews with 12 researchers and practitioners involved with the topic until all 12 were satisfied with the final formulations.

Both samples were collected in cooperation with two market research firms. That resulted in 126 responses from provider firms and 156 responses from customer firms. To increase the provider sample size, 849 sales managers at the top tier or second level of management were invited to participate in the survey via personalized emails. As an incentive, they were offered an executive-oriented post-survey management summary and recommended improvement measures. After one gentle reminder, 21 responses were received (2.5%), leading to 147 responses from provider firms

in total. Feedback from non-respondents indicated an inability to participate due to privacy concerns. As this reason is not linked to the survey's topic, there is no indication of a non-response bias (Ravichandran and Rai 2000). The participation was strictly voluntary for all persons contacted.

The data obtained were used to test the hypothesized research models via *structural equation modeling* (SEM). In particular, *partial least squares SEM* (PLS-SEM; Hair et al. 2011; Wold 1966) and the extension *consistent PLS-SEM* (PLSc-SEM; Dijkstra and Henseler 2015a; Dijkstra and Henseler 2015b) were used. All analyses were conducted with the software *SmartPLS 3.2* (Ringle et al. 2015) and the *R* package *plspm* (Sanchez et al. 2017). PLS-SEM is a causal modeling approach that aims at maximizing the explained variance of dependent latent constructs (Hair et al. 2011). PLS-SEM has been used in a variety of disciplines (e.g., marketing, strategic management; Henseler et al. 2009a) and is especially prevalent in IS research (Hair et al. 2011). It should be noted, however, that there is an ongoing debate regarding the advantages and disadvantages of using PLS-SEM instead of *covariance-based SEM* (CB-SEM), the second type of SEM (e.g., Antonakis et al. 2010; Rönkkö and Evermann 2013). To remedy these concerns, PLSc-SEM, an extension of PLS-SEM, is used in the fourth essay. It is supposed to avoid potentially inflated loadings and path coefficients resulting from PLS-SEM. It has been shown that the estimates of PLSc-SEM are comparable to those of CB-SEM (Dijkstra and Henseler 2015b).

Summaries of the Four Essays and How They Are Related

All four essays in this thesis have been published in or submitted to double-blind, peer-reviewed journals or (ranked) conference proceedings. The first essay “The Effect of Service Modularity on Flexibility in the Digital Age – An Investigation in the B2B Context,” co-authored with Thomas Widjaja and Nicolas Zacharias (see Stoffer et al. 2018b) and published in the *Lecture Notes in Business Information Processing* (VHB-JOURQUAL3 (JQ3) rating¹: C), won the *Best Paper Award* of the *International Conference on Exploring Service Science 2018*. The second essay “Leveraging the Value of Cocreation during Service Provisions through Digitalization – An Empirical Investigation in the B2B Context,” of which I am the sole author (see Stoffer 2019), has been submitted to the *40th International Conference on Information Systems* (VHB-JQ3 rating: A) and is currently under review. The third essay “The Diverging Effect of Digitalization on Perceived Relational Conflict during Service Provisions – An Empirical Comparison of Suppliers and Customers in the B2B Context,” co-authored with Thomas Widjaja and Nicolas Zacharias (see Stoffer et al. 2018a), was published as a short paper in the *Proceedings of the 39th International Conference on Information Systems* (VHB- JQ3 rating: A). The fourth essay “The Dark Side of Sales and Service Digitalization: Do They Amplify the Impact of Coercive Power Use on Relational Conflict in B2B Relationships?,” also co-authored with Thomas Widjaja and Nicolas Zacharias (see Stoffer et al. 2019), has been submitted to the *Information Systems Journal* (VHB-JQ3 rating: A).

The first and second essays investigate the contingency effect of service digitalization on service characteristics from the provider and customer views, respectively. Both essays aim at explaining

¹ The ranking is provided by the German Academic Association for Business Research (VHB) and currently available in version JQ3. It can be viewed online at <https://vhbonline.org/en/service/jourqual/vhb-jourqual-3/complete-list-of-the-journals/>.

service value as an endogenous variable. In the first essay, service flexibility (i.e., the mediator) and service modularity (i.e., the exogenous variable) are considered as predecessors that help explain service value. The second essay investigates the effect on service value of customer cocreation. Whereas the first and second essays focus on service characteristics, the third and fourth essays focus on business relationships. Both essays explain relational conflict, one important facet of business relationships (e.g., Fürst et al. 2017; Lacity and Willcocks 2017), as the endogenous variable and consider the perspectives of both providers and customers. The third essay elaborates on the diverging effect of service digitalization on relational conflict from these two perspectives. The fourth essay incorporates both service and sales digitalization and investigates the contingency effects of the two forms of digitalization on the relationship between coercive power use and relational conflict. The text that follows addresses each essay individually, motivating the research questions and summarizing the main findings.

The first essay (Stoffer et al. 2018b) investigates the contingency effect of service digitalization on service characteristics from the provider's point of view (see Figure 1). The essay shows in particular that service digitalization positively moderates the well-known positive relationship between service modularity and service flexibility (Xue et al. 2013) and confirms the positive effect of service flexibility on service value for customers.

In line with Baldwin and Clark (1997) and Vickery et al. (2016), *service modularity* is defined in the essay as the degree to which services consist of service modules designed independently to offer specific functionality. For example, *Amazon Web Services* is offered as modularized digital services. The service modules comprise, among others, a variety of databases (e.g., MySQL, DynamoDB), storages (e.g., Amazon Simple Storage Service, Amazon Elastic File System), and machine learning libraries (e.g., TensorFlow, PyTorch; Amazon Web Services 2019). Depending on their requirements, customers can choose among these independently designed modules and combine them to receive a service.

One important effect of service modularity is its positive effect on service flexibility (Dörbecker and Böhmman 2013). *Service flexibility* is defined as the extent of possibilities a provider has to provide different services (Böttcher and Klingner 2011; Fixson 2007; Nelson et al. 2005; Rahikka et al. 2011). While the literature has shown the positive effect of service modularity on service flexibility both for non-digital services (Moon et al. 2010) and digital services (Lewis et al. 2011), the literature in the context of digital business strategy posits that modularization offers unprecedented magnitudes of flexibility in combination with digitalization (Bharadwaj et al. 2013; Yoo 2013). Hence, it remains unclear whether and how service digitalization influences service modularity. Therefore, this essay aims at offering an explanation for this contradiction:

Essay 1 Research Question (EIRQ): Does service digitalization moderate the effect between service modularity and service flexibility?

As service flexibility itself cannot be a primary objective for service providers, service value, which is an important factor for providers to succeed in B2B markets, is also considered in the first essay. *Service value* is defined as the superiority of a service in terms of its quality and benefits for the customer (Stock and Zacharias 2011).

By analyzing the provider sample with PLS-SEM, the essay confirms that service modularity positively influences service flexibility (path coefficient of .297 and p-value of .001). Regarding the moderating effect of service digitalization on this relationship (path coefficient of .297 and p-value of .045), a “pure moderator” (Sharma et al. 1981) with a large effect size (f^2 effect size of .090) can be confirmed (Hair et al. 2017; Kenny 2015). In addition, the presumed positive effect of service flexibility on service value is confirmed as well (path coefficient of .291 and p-value of .001).

The first essay contributes to theory in multiple ways. First, the essay confirms the existing literature, which states that there is a positive effect of service modularity on service flexibility both for non-digital (Moon et al. 2010) and digital services (Lewis et al. 2011). Furthermore, it enhances the results presented in the literature by showing that the effect is stronger for digital than non-digital services (i.e., the relationship is positively moderated by service digitalization). In addition, the essay empirically underpins the conceptualizations proposing that service digitalization, in combination with service modularity, offers unprecedented magnitudes of service flexibility (Bharadwaj et al. 2013; Yoo 2013). In addition, the essay responds to a call of Nambisan et al. (2017) to consider digitalization as an influencer of service modularization and not only as a mere context. The essay responds as well to a call of Brax et al. (2017) to investigate the influence of service modularization on customers’ service experiences. By confirming the positive effect of service modularity on service flexibility and the positive effect of service flexibility on service value, the first essay investigates in detail one aspect of customers’ service experiences (i.e., service value).

In addition to the theoretical results, the essay yields important insights for providers of services in the B2B context. The results encourage providers to examine the modularization of their existing services as well as to consider modularization specifically when creating new services. This recommendation holds especially for digital services, given the positive moderating effect of service digitalization shown in the essay. In summation, the essay shows that service modularity can be a mean for providers to offer competitive services in highly competitive B2B markets characterized by heterogeneous and rapidly changing customer needs (e.g., Böttcher and Klingner 2011; Chun-Hsien and Chu-Ching 2010; Rahikka et al. 2011).

The first essay has its limitations, which may provide an avenue for future research. The essay focuses only on the relationship between service modularity and service flexibility. As service modularization also affects other factors (e.g., cost reduction, mitigation of risks), future research could investigate the contingency effect of service digitalization on these relationships. In addition, the essay considers only the service modules of the provider participating in the survey. Future research could extend this view by considering services comprised of the service modules of different providers that have been or could be combined via a service platform.

The second essay (Stoffer 2019) aims at the same object of investigation as the first essay (i.e., service characteristics) and incorporates the same contingency factor (i.e., service digitalization). In contrast to the first essay, the second essay considers the importance of a service characteristic for customers (see Figure 1). In particular, the essay shows that service digitalization positively moderates the positive effect between customer cocreation and service value.

Customer cocreation is defined in the essay as the extent of customers’ integration into service provisions (Vargo and Lusch 2008; Vargo and Lusch 2016). It is known that customer cocreation is especially apparent in the B2B context (Bolton and Saxena-Iyer 2009). For example, during the

benchmarking of a company's cybersecurity maturity, companies receiving the service must provide information that can either be collected automatically (e.g., checks of whether the installed software is up to date) or must be provided manually (e.g., the personnel's ability to deal with phishing mails). Afterwards, the company has to put the derived strategy into practice, which requires its direct involvement as well. The literature has shown in a variety of contexts that cocreation leads to, among others, the advantage of a greater customer service value (Chan et al. 2010; Dong et al. 2008; Ostrom et al. 2010). As in the first essay, *service value* here is defined as a service's quality and benefits by considering the sacrifices made (e.g., monetary cost, time, and effort) as perceived by the customer (Aarikka-Stenroos and Jaakkola 2012; Stock and Zacharias 2011). Companies have also acknowledged the importance of cocreation for the customer journey. For example, DHL, a global market leader in logistics, has built special innovation centers in Germany and Singapore where it holds workshops with customers and DHL service providers aimed at ensuring that DHL customers are included in service provisions in a way that creates value for both companies (Crandell 2016). Chan et al. (2010) even characterize cocreation as the next frontier in competitive effectiveness.

Nevertheless, the literature finds a positive effect of cocreation on service value both for digital and non-digital services in the B2B context (Dong and Sivakumar 2017; Lusch and Nambisan 2015; Ostrom et al. 2015) and lacks an explicit consideration of the contingency effect of service digitalization on the relationship. This essay aims at solving that ambiguity:

Essay 2 Research Question (E2RQ): Does service digitalization moderate the effect of cocreation by the customer on service value in the B2B context?

By analyzing the customer sample with PLS-SEM, the essay confirms that customer cocreation positively influences service value (path-coefficient of .220 and p-value of .007). Regarding the moderating effect of service digitalization on this relationship (path coefficient of .165 and p-value of .015), a "quasi moderator" (Sharma et al. 1981) with a large effect size (f^2 effect size of .037) can be confirmed (Hair et al. 2017; Kenny 2015).

The second essay contributes to theory in multiple ways. First, by showing that service digitalization positively moderates the relationship between customer cocreation and service value, it underpins the conceptual thoughts of Yoo (2013) and Sambamurthy et al. (2003). In addition, it answers the calls of Lusch and Nambisan (2015) and Ostrom et al. (2015) to investigate empirically the interplay between service digitalization and cocreation. Second, by addressing customers in B2B relationships, the essay provides empirical support for customers' views on value generation and the moderating impact of service digitalization. Hence, it provides empirical evidence for investigations, as requested by Rai and Tang (2014), of digital and non-digital services that are vital to providers' effective positioning and competition. Third, both customer cocreation and service value are core principles of the S-D logic. As the essay targets these factors with its basic relationship, its evidence-based results strengthen S-D logic as proposed by Vargo and Lusch (2017).

In addition to the theoretical results, the essay also offers important insights for providers in the B2B context who are puzzled about the consequences for their services. The results encourage providers to integrate their customers actively into service provisions. By doing this, both can benefit from the increase in service value as perceived by the customer. This recommendation holds especially for providers offering digital services. As a result, providers can benefit from a competitive advantage (Karpen et al. 2015), improvements of existing services or the development of innovative new

services (e.g., Nambisan 2002; Nambisan and Baron 2009; Sawhney et al. 2005), and sustainable business relationships (Lacoste 2016).

This essay also has limitations that may stimulate future research. The survey ensured that responders' adoption decisions had been taken within the preceding six months. Hence, the model was tested in an early phase of the service provision. The investigated effect may, however, evolve over time, and so further exploration of the research model at later points in the business relationships could extend or strengthen the results. In line with the core principles of S-D logic, the essay focuses on the effect of cocreation on value. As cocreation affects additional factors positively (e.g., customization) or negatively (e.g., effort), future research could also consider the moderating effect of service digitalization on these effects. Furthermore, as the essay investigates service value as its endogenous variable, the essay considers only the customer view of the research model. Future research could incorporate the provider view on factors relevant for them (e.g., Chan et al. (2010) have shown that an increase in job stress for providers' employees as a consequence of cocreation).

In contrast to the first two essays, **the third essay** (Stoffer et al. 2018a) investigates the influence of service digitalization on a characteristic of business relationships. By doing this, it considers both the provider and customer points of view (see Figure 1). In particular, the essay shows that service digitalization has an impact on relational conflict that is positive for providers and negative for customers.

Business relationships are characterized by their relational characteristics (e.g., commitment, trust, conflict; Fürst et al. 2017; Lacity and Willcocks 2017). These factors can either foster or impede business relationships (Dyer and Singh 1998). The essay focuses on *relational conflict* as the most important relationship characteristic (e.g., Fürst et al. 2017; Griffith et al. 2017; Kelly and Scott 2012). It is defined as behavior that impedes, blocks, or frustrates providers' or customers' goal pursuit (Kumar et al. 1995; Palmatier et al. 2007).

Although conflicts are inevitable in complex B2B relationships (Borys and Jemison 1989; Duarte and Davies 2003), providers and customers try to minimize the conflicts during service provisions to achieve successful outcomes (Graca et al. 2015). Hence, providers and customers need a better understanding about the changes for relational conflict induced by service digitalization in the B2B context:

Essay 3 Research Question (E3RQ): How do providers and customers assess the impact of service digitalization on perceived relational conflict during service provisions in the B2B context?

The analysis considers both the provider and customer sample with PLS-SEM, as the literature has shown that conflict is sometimes perceived differently by the involved parties (Lee and Johnsen 2012). The essay confirms that for providers, service digitalization positively influences relational conflict (path coefficient of .232 and p-value of .001) and, that for customers, service digitalization negatively influences relational conflict (path coefficient of -.177 and p-value of .013). In addition to the opposing signs, the permutation test (Chin and Dibbern 2010) and the PLS-MGA approach (Henseler et al. 2009b) confirm the response to E3RQ.

The third essay contributes to theory in multiple ways. First, the essay extends and complements research showing that the perceptions of providers and customers on business relationships differ

(e.g., Lee and Johnsen 2012; Paluch and Wunderlich 2016). Some of these studies show, in the B2C context, that due to increased customer involvement during the provision of digital services, customers attribute to themselves, to a larger extent, the reasons for problems (Harris et al. 2006; Heidenreich et al. 2015; Meuter et al. 2000; Zhu et al. 2013). Other studies show that it becomes more difficult for providers to become aware of and resolve conflicts (e.g., Graca et al. 2015; Palmatier 2008; Palmatier et al. 2006; Ramani and Kumar 2008). The essay's result lends empirical support for transferring the results of these studies from the B2C to the B2B context. Second, by elaborating on the effect of service digitalization on relational conflict, which is an important characteristic of B2B relationships, the essay follows calls in the literature for empirical research in the B2B context in general and in the context of B2B relationships in particular (e.g., Chan et al. 2010; Ostrom et al. 2010). In addition, it extends the research that focuses only on the cost advantages of service digitalization (Ba et al. 2010).

In addition to the theoretical results, the essay also offers important insights for providers offering business services. Due to the diverging perceptions, providers should reassess their view on the consequences of digitalization related to conflict in their relationships with customers receiving digital services. In addition, they are encouraged to find new ways to become aware of upcoming relational conflicts during the provision of digital services as early as possible (e.g., by finding usage patterns of digital services that occur when customers encounter problems).

As with the first and second essays, this essay has limitations that could provide an avenue for future research. Relational conflict can evolve over time (Dyer and Singh 1998) and so the impact of service digitalization on relational conflict. This essay focuses on an early phase of business relationships, but future research could replicate the work presented in the essay for different points in time. While this essay focuses only on the destructive part of conflicts, they can also be constructive (Song et al. 2006). Hence, future research could incorporate the constructive part of conflict into the research model. Further, problems during service provisions are often accompanied by service recovery, and so future research could also explore the most effective recovery strategy against the background of a service's degree of digitalization.

Similar to the third essay, **the fourth essay** (Stoffer et al. 2019) investigates business relationships both from the provider and customer point of view (see Figure 1), but incorporates *coercive power use* as the exogenous variable. In contrast to the other three essays, the fourth essay considers the contingency effects of both service and sales digitalization. In particular, the essay shows that service digitalization positively moderates the positive effect of power use on relational conflict for the weaker parties in business relationships in both samples and that sales digitalization positively moderates the positive effect for the weaker parties only from the customer point of view.

The use of power is an important consideration for business relationships. Power in business relationships results from asymmetric dependencies, which exist when the *weaker party* is dependent on the *stronger party*. The stronger party's use of its power can have a negative (coercive power; e.g., increased conflict) or positive impact (noncoercive power; e.g., increased cooperation) on business relationships (Hunt and Nevin 1974; Lusch 1976; Skinner et al. 1992). The fourth essay focuses on *coercive power*, defined as the extent to which the stronger party shapes a business relationship to its advantage (Frazier 1999; Heide and Miner 1992; Schmitz et al. 2016). Following

Emerson (1962), the stronger parties can deliberately choose the extent to which they use their coercive power.

As there are downsides, the choice of exercising coercive power is delicate. *Relational conflict*, the most important downside (e.g., Fürst et al. 2017; Griffith et al. 2017; Kelly and Scott 2012), is defined in the same way as in the third essay: Behavior that impedes, blocks, or frustrates providers' or customers' goal pursuit (Kumar et al. 1995; Palmatier et al. 2007). Hence, companies offering or receiving B2B services need a better understanding of the effects of coercive power use on relational conflict during digital sales and for selling digital services:

Essay 4 Research Question 1 (E4RQ1): How does sales digitalization moderate the effect of coercive power use on relational conflict during sales?

Essay 4 Research Question 2 (E4RQ2): How does service digitalization moderate the effect of coercive power use on relational conflict during sales?

The literature, when elaborating on power use, distinguishes between the views and roles of the stronger and weaker parties (e.g., Morgan et al. 2018; Zhang et al. 2017). Hence, the two groups are distinguished when investigating the moderating effects:

Essay 4 Research Question 3 (E4RQ3): Do the moderating effects (see E4RQ1 and E4RQ2) differ for the weaker and stronger parties?

As the third essay and prior studies (e.g., Lee and Johnsen 2012; Paluch and Wunderlich 2016) show, relational conflict can be perceived differently by providers and customers. To account for these differences, the views of both parties are investigated separately:

Essay 4 Research Question 4 (E4RQ4): Do the moderating effects (see E4RQ1 and E4RQ2) differ for providers and customers?

To answer these four research questions, eight sub-models are distinguished to account for the three contingency factors considered: sales and service digitalization (addressed by E4RQ1 and E4RQ2); weaker and stronger parties (addressed by E4RQ3); and the customer and provider samples (addressed by E4RQ4).

By analyzing the provider and customer sample with PLSc-SEM, the essay confirms that in all sub-models coercive power use has a positive effect on relational conflict. For the moderating effect of sales digitalization (E4RQ1 in combination with E4RQ3 and E4RQ4), the expected positive effect can be confirmed only for the weaker parties in the customer sample (path coefficient of .171 and p-value of .044). The moderation is considered as a "pure moderator" (Sharma et al. 1981) with a large effect size (f^2 value of .033). The moderating effect of service digitalization (E4RQ2 in combination with E4RQ3 and E4RQ4) shows to be significantly positive for the weaker parties (provider sample: path coefficient of .243 and p-value of .026; customer sample: path coefficient of .207 and p-value of .023) and insignificant for the stronger parties in both samples. In both samples, a "quasi moderator" (Sharma et al. 1981) with a large effect size (provider sample: f^2 effect size of .115; customer sample: f^2 effect size of .046) can be confirmed (Hair et al. 2017; Kenny 2015). In addition, one-sided unpaired t-tests show that the moderating effect of sales digitalization is significantly larger for the weaker than stronger parties in the customer sample (t-value of 13.523 and p-value of .000) and the moderating effect of service digitalization is significantly larger for the

weaker than stronger parties in both samples (provider sample: t-value of 13.902 and p-value of .000; customer sample: t-value of 11.505 and p-value of .000).

The non-significance of the moderating effect of sales digitalization for the weaker parties in the provider sample is somewhat unexpected. Digital sales are driven mainly by provider IT, which restricts the ability of the customer to interact with actual people but not the providers' ability. This is, for example, the case when the provider uses an online shop for its sales: Doing so hinders the customers from direct contact with provider personnel but does not hinder the providers from contacting customers in other ways (e.g., by phone). Hence, the consequences of sales digitalization affect only customers.

The fourth essay contributes to theory in multiple ways. First, in addition to the known contingency factors stronger and weaker parties (S4RQ3; e.g., Morgan et al. 2018; Zhang et al. 2017) and involved parties (S4RQ4; e.g., Lee and Johnsen 2012; Paluch and Wunderlich 2016), the essay includes and compares sales (E4RQ1) and service digitalization (E4RQ2) as new contingency factors when elaborating on power use in business relationships. In so doing, the essay shows, that from the customer point of view, weaker parties perceive the influence of service and sales digitalization as more severe than stronger parties, while for providers this effect can be shown only for service digitalization. Hence, the essay provides evidence that it is necessary to include all three contingency factors when elaborating on coercive power use in business relationships. This result is expected to be relevant for the literature in the context of power use. For example, in the study of Rindt and Mouzas (2015), the role of private rules are expected to differ during the sales of digital and non-digital services. Additionally, the role of *guanxi*, which Zhuang et al. (2010) define as emotional closeness and an interactive state between employees, is expected to change during digital or non-digital sales. Second, on a more abstract level, the essay's empirical results support that procedural justice theory (Han et al. 2014; Thibaut and Walker 1975) can be transferred to dependence research (Gulati and Sytch 2007; Kumar et al. 1995), which may also be helpful for others. For example, different literature on dependence research (e.g., Rindt and Mouzas 2015; Van den Abbeele et al. 2009) has observed phenomena that can be attributed to the procedural justice theory and, hence, provide examples for additional moderators that can be related to procedural justice theory.

In addition to the theoretical results, the essay also yields important insights for companies offering or receiving services in the B2B context. Providers offering services with different degrees of digitalization (i.e., service digitalization) or running sales channels differing in their degree of digitalization (i.e., sales digitalization) obtain insights into how to manage their business relationships. Providers are encouraged to use their coercive power carefully during digital sales and make use of the possibilities arising from non-digital services to mitigate the consequences of their coercive power use for customers. In addition, they should find ways to absorb the coercive power used against them when they are the weaker party by increasing the flexibility of their digital services. Being the weaker party, customers are encouraged to find ways to lower the degree of digitalization in the sales process through, for example, active personal contact with a salesperson.

These findings should be interpreted in light of the essay's limitations, which may provide an avenue for future research. In addition to the consequences of coercive power use, future research could also incorporate non-coercive power use, which is expected to have a more positive impact (e.g., increased cooperation) on business relationships (Hunt and Nevin 1974; Skinner et al. 1992),

against the background of sales and service digitalization. Relational conflict has been found to evolve over time (Morgan et al. 2018). This essay focuses on the beginning of business relationships, but its investigations could be replicated for different points in time in business relationships. Future research could also consider different forms of sales digitalization. For example, today's advances in artificial intelligence seek to imitate human behavior in digital sales as well as possible (e.g., via chatbots).

Overall Discussion

In four essays, this thesis addresses the opportunities and challenges resulting from service and sales digitalization related to service provisions and business relationships for companies offering or receiving services in the B2B context. Beyond the individual contributions of each essay as elaborated in the previous section, this thesis as a whole makes three overarching contributions and has several implications for practitioners.

First, the thesis provides a more fine-grained view on the construct *digitalization* by differentiating explicitly between *service digitalization* and *sales digitalization* (see Figure 1). This is in contrast to the use in the literature of the generic term *digitalization* to encompass both sales digitalization (e.g., Gorla et al. 2017; Langer et al. 2012) and service digitalization (e.g., Baird and Raghu 2015; Paluch and Wunderlich 2016; Scherer et al. 2015). By drawing this distinction, the thesis shows that service digitalization has a positive contingency effect on service characteristics (see the first and second essays) and opposing effects on relational conflict for providers and customers (see the third essay). In addition, it shows that the effects of the two forms of digitalization can differ (see the fourth essay). Future research could benefit from this distinction as well. For example, scholars could extend the results of Gorla et al. (2017), who focus on the adoption of sales channels, by considering the adoption of services. This could lead to identifying similarities and differences in the adoption of services and sales channels against the background of their respective degrees of digitalization, which could provide valuable insights.

Second, this thesis introduces a new conceptualization of service (see all four essays) and sales digitalization (see the fourth essay) by treating digitalization as a continuum. This is in contrast to previous literature that has treated sales digitalization and service digitalization as a binary concept by considering only non-digital and/or digital services and sales processes and, hence, has not considered services or sales processes comprising both non-digital and digital components (e.g., Gorla et al. 2017; Paluch and Wunderlich 2016; Scherer et al. 2015). The conceptualization as a continuum is more realistic, as both forms of digitalization are more nuanced in practice (e.g., 81% of the services and 78% of the sales processes included in this thesis's dataset have a degree of digitalization between 20% and 80%). All four essays benefit from the conceptualization because it facilitates investigating the effects of service and sales digitalization in more detail. Researchers in different fields could benefit from this conceptualization as well. For example, by incorporating the conceptualization of service digitalization introduced here into the study of Baird and Raghu (2015), scholars could identify variations in providers' service business models by taking their degree of digitalization into account. The study of Paluch and Wunderlich (2016) could be enhanced by identifying changes in the importance of the risks considered for B2B customers' overall risk perception caused by the services' degree of digitalization. By incorporating the conceptualization

of sales digitalization into the study of Gorla et al. (2017), scholars could provide a more nuanced evaluation of the adoption factors of (digital) sales. Furthermore, scholars could enhance the results of Langer et al. (2012) by providing an even more detailed alignment of customers' choice of sales channels with different degrees of digitalization.

Third, building upon the first and second contribution, the thesis creates a deeper understanding of services and business relationships. In particular, the first and second essays show the opportunities service digitalization creates for providers, who could benefit from service modularity, and customers, who could benefit from the integration of their own resources into service provisions. These investigations of the contingency effect of service and sales digitalization on service characteristics (see Figure 1) enhance the literature covering services consisting of digital and non-digital components (e.g., Barrett et al. 2015; Ostrom et al. 2015). In addition, the third and fourth essays outline the challenges raised by service and sales digitalization for business relationships both for providers and customers. With these empirical investigations of the contingency effects of service and sales digitalization on B2B relationships (see Figure 1), the two essays enhance the literature by offering evidence-based results in the B2B context in general and in the context of B2B relationships in particular (e.g., Chan et al. 2010; Ostrom et al. 2010). Furthermore, the third and fourth essays point out differences between the provider and customer views when elaborating on business relationships. In so doing, they strengthen research that shows that the perceptions of providers and customers can differ in that context (e.g., Lee and Johnsen 2012; Paluch and Wunderlich 2016; Vosgerau et al. 2008).

Each of the four essays presents providers and customers that offer or receive services in the B2B context with recommendations how service and sales digitalization influences service provisions and business relationships. By combining the practical implications of each essay, this thesis shows that service and sales digitalization are accompanied by various opportunities and challenges for providers and customers. On the one hand, the thesis highlights that providers should use modularization of digital services to a larger extent to benefit from the increased flexibility (see first essay) and providers should integrate their customers into service provisions (i.e., customer cocreation), which is fostered by service digitalization, to deliver a higher-value service. On the other hand, the thesis points out the challenges caused by service and sales digitalization for business relationships both for providers and customers (see third and fourth essays). In particular, the thesis advises both parties to pay closer attention to conflicts in their business relationships, which are more difficult to uncover in digital contexts.

In addition to the limitations mentioned for each individual essay and the resulting implications for future research of each essay's respective research stream, the overall thesis also has limitations that may provide avenues for future research. The thesis's investigations are based on two separate data collections among providers and customers rather than matched provider and customer data for each business relationship—so-called *dyadic data*. Although dyadic data has numerous advantages, it runs the risk of adverse selection: The customer is typically selected by the provider or vice versa, which can yield samples with mainly smooth relationships. This thesis's approach, by contrast, ensured that both successful (i.e., the customer adopted the offered service) and unsuccessful sales processes (i.e., the customer did not adopt the offered service) are included in the samples. This is especially beneficial for investigations into business relationships (see third and fourth essays). The approach taken in this thesis is in line with, for example, Panagopoulos et al. (2017), who investigated the

contingency effects of provider–customer relationship characteristics measured at the customer in the B2B context. Unsuccessful sales processes can end before the participants have built a proper relationship, thus risking that the participants are not able to make a valid assessment of that business relationship. Sales processes in the B2B context typically require a long time (Accenture 2018; Catlin et al. 2016) and participants for this thesis were asked to choose business partners with which they had experience, thus ensuring that they were able to answer the survey questions validly even for unsuccessful sales processes. In addition, participants in the dataset had been working an average of 11 years for their companies; in other words, they were very experienced.

Both datasets were collected through cross-sectional surveys completed by a single respondent at a specific point in time. This runs the risk of *common method variance* (CMV; also known as *common method bias*; Hulland et al. 2018; Podsakoff et al. 2003). A variety of efforts were made to avoid CMV. Prior to data collection, participants were told only the context of the survey but not concrete research questions. In addition, constructs were separated in the questionnaire to limit the chance that participants could guess the relationships being evaluated (Hulland et al. 2018). After data collection, different statistical tests were applied (Kock 2015; Lindell and Whitney 2001; Pavlou et al. 2007), all of which showed no indication of CMV.

The four essays shed light on the consequences of digitalization with respect to important relationships in the context of services (i.e., service modularization on service flexibility and cocreation on service value) and business relationships (i.e., service digitalization and power use on relational conflict). Nevertheless, services and business relationships are characterized by a number of additional factors (e.g., innovativeness, risk, trust; Johnston and Lewin 1996; Waarts et al. 2002). Hence, future research could incorporate these factors and their relationships as well as the contingency effects of service and sales digitalization on those relationships. With the rise of digital platforms for service provisions and sales, business relationships are no longer solely between one provider and one customer. Digital service platforms enable multiple providers to combine their services for the service provision of one customer (e.g., Bharadwaj et al. 2013; Yoo 2013). Sales via digital sales platforms change the sales process by adding the platform as an additional intermediary, which also affects the business relationships between providers and customers (e.g., Pilehvar et al. 2016). Hence, future research could transfer this thesis's investigations to the platform context for both service provisions and sales to identify changes brought about by these digital platforms.

Building on 303 responses from 147 provider companies offering services and 156 customer companies receiving services in the B2B context, this thesis investigates opportunities and challenges brought about by digitalization. Through four essays focused on different facets of services and business relationships, the thesis contributes to a better understanding of the consequences of service and sales digitalization and provides recommendations for companies facing challenges and decisions related to this development.

Funding

The thesis has been funded in part by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) – WI 4301/2-1.

References

- Aarikka-Stenroos, L., and Jaakkola, E. 2012. "Value Co-Creation in Knowledge Intensive Business Services: A Dyadic Perspective on the Joint Problem Solving Process," *Industrial Marketing Management* (41:1), pp. 15-26.
- Accenture. 2018. "On the Verge – B2B Digital Commerce is at an Inflection Point." Retrieved 2019-04-08, from https://www.accenture.com/t20180522T025432Z_w_/us-en/_acnmedia/PDF-78/Accenture-Verge-B2B-Digital-Commerce.pdf.
- Amazon Web Services. 2019. "Big Data Solutions – Amazon Web Services (Aws)." Retrieved 2019-04-05, from <https://aws.amazon.com/big-data/>.
- Antonakis, J., Bendahan, S., Jacquart, P., and Lalive, R. 2010. "On Making Causal Claims: A Review and Recommendations," *The Leadership Quarterly* (21:6), pp. 1086-1120.
- Ba, S., Stallaert, J., and Zhang, Z. 2010. "Balancing It with the Human Touch: Optimal Investment in It-Based Customer Service," *Information Systems Research* (21:3), pp. 423-442.
- Baird, A., and Raghu, T. S. 2015. "Associating Consumer Perceived Value with Business Models for Digital Services," *European Journal of Information Systems* (24:1), pp. 4-22.
- Baldwin, C. Y., and Clark, K. B. 1997. "Managing in an Age of Modularity," *Harvard Business Review* (75:5), pp. 84-93.
- Barrett, M., Davidson, E., Prabhu, J., and Vargo, S. L. 2015. "Service Innovation in the Digital Age: Key Contributions and Future Directions," *MIS Quarterly* (39:1), pp. 135-154.
- Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., and Venkatraman, N. 2013. "Digital Business Strategy: Toward a Next Generation of Insights," *MIS Quarterly* (37:2), pp. 471-482.
- Böhmman, T., Junginger, M., and Krcmar, H. 2003. "Modular Service Architectures: A Concept and Method for Engineering It Services," *36th Annual Hawaii International Conference on System Sciences*, pp. 10-19.
- Bolton, R., and Saxena-Iyer, S. 2009. "Interactive Services: A Framework, Synthesis and Research Directions," *Journal of Interactive Marketing* (23:1), pp. 91-104.
- Borys, B., and Jemison, D. B. 1989. "Hybrid Arrangements as Strategic Alliances: Theoretical Issues in Organizational Combinations," *Academy of Management Review* (14:2), pp. 234-249.
- Böttcher, M., and Klingner, S. 2011. "Providing a Method for Composing Modular B2B Services," *Journal of Business & Industrial Marketing* (26:5), pp. 320-331.
- Brax, S. A., Bask, A., Hsuan, J., and Voss, C. 2017. "Service Modularity and Architecture – an Overview and Research Agenda," *International Journal of Operations & Production Management* (37:6), pp. 686-702.
- Catlin, T., Harrison, L., Lun Plotkin, C., and Stanley, J. 2016. "How B2B Digital Leaders Drive Five Times More Revenue Growth Than Their Peers." Retrieved 2019-04-10, from <https://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/how-b2b-digital-leaders-drive-five-times-more-revenue-growth-than-their-peers>.
- Chan, K. W., Yim, C. K., and Lam, S. S. K. 2010. "Is Customer Participation in Value Creation a Double-Edged Sword? Evidence from Professional Financial Services across Cultures," *Journal of Marketing* (74:3), pp. 48-64.
- Chin, W. W., and Dibbern, J. 2010. "A Permutation Based Procedure for Multi-Group Pls Analysis: Results of Test of Differences on Simulated Data and a Cros Cultural Analysis of the Sourcing of Information System Services between Germany and the USA," in: *Handbook of Partial Least Squares*. Springer, pp. 501-517.
- Chun-Hsien, L., and Chu-Ching, W. 2010. "Formulating Service Business Strategies with Integrative Services Model from Customer and Provider Perspectives," *European Journal of Marketing* (44:9/10), pp. 1500-1527.
- Crandell, C. 2016. "Customer Co-Creation is the Secret Sauce to Success." Retrieved 2019-04-17, from https://www.forbes.com/sites/christinecrandell/2016/06/10/customer_cocreation_secret_sauce.
- Di Lorenzo, G. 2016. "Der Unterschied Zwischen Mensch Und Maschine Wird in Kürze Aufgehoben Sein," 1, Zeitverlag Gerd Bucerius, Hamburg, pp. 13-15.

- Dijkstra, T. K., and Henseler, J. 2015a. "Consistent and Asymptotically Normal PLS Estimators for Linear Structural Equations," *Computational Statistics & Data Analysis* (81), pp. 10-23.
- Dijkstra, T. K., and Henseler, J. 2015b. "Consistent Partial Least Squares Path Modeling," *MIS Quarterly* (39:2), pp. 297-316.
- Dong, B., Evans, K. R., and Zou, S. 2008. "The Effects of Customer Participation in Co-Created Service Recovery," *Journal of the Academy of Marketing Science* (36:1), pp. 123-137.
- Dong, B., and Sivakumar, K. 2017. "Customer Participation in Services: Domain, Scope, and Boundaries," *Journal of the Academy of Marketing Science* (45:6), pp. 944-965.
- Dörbecker, R., and Böhmman, T. 2013. "The Concept and Effects of Service Modularity – a Literature Review," *46th Annual Hawaii International Conference on System Sciences (HICSS-46)*, pp. 1357-1366.
- Duarte, M., and Davies, G. 2003. "Testing the Conflict-Performance Assumption in Business-to-Business Relationships," *Industrial Marketing Management* (32:2), pp. 91-99.
- Dyer, J. H., and Singh, H. 1998. "The Relational View: Cooperative Strategy and Sources of Interorganizational Competitive Advantage," *Academy of Management Review* (23:4), pp. 660-679.
- Emerson, R. M. 1962. "Power-Dependence Relations," *American Sociological Review* (27:1), pp. 31-41.
- Fixson, S. K. 2007. "Modularity and Commonality Research: Past Developments and Future Opportunities," *Concurrent Engineering* (15:2), pp. 85-111.
- Frazier, G. L. 1999. "Organizing and Managing Channels of Distribution," *Journal of the Academy of Marketing Science* (27:2), pp. 226-240.
- Froehle, C. M., and Roth, A. V. 2004. "New Measurement Scales for Evaluating Perceptions of the Technology-Mediated Customer Service Experience," *Journal of Operations Management* (22:1), pp. 1-21.
- Fürst, A., Leimbach, M., and Prigge, J.-K. 2017. "Organizational Multichannel Differentiation: An Analysis of Its Impact on Channel Relationships and Company Sales Success," *Journal of Marketing* (81:1), pp. 59-82.
- Gartner. 2009. "Gartner Says Worldwide IT Spending on Pace to Decline 6 Percent in 2009." Retrieved 2016-04-16, from <https://www.gartner.com/newsroom/id/1059813>.
- Gartner. 2019. "Gartner Says Global IT Spending to Reach \$3.8 Trillion in 2019." Retrieved 2019-04-15, from <https://www.gartner.com/en/newsroom/press-releases/2019-01-28-gartner-says-global-it-spending-to-reach--3-8-trillio>.
- Gorla, N., Chiravuri, A., and Chinta, R. 2017. "Business-to-Business E-Commerce Adoption: An Empirical Investigation of Business Factors," *Information Systems Frontiers* (19:3), pp. 645-667.
- Graca, S. S., Barry, J. M., and Doney, P. M. 2015. "Performance Outcomes of Behavioral Attributes in Buyer-Supplier Relationships," *Journal of Business & Industrial Marketing* (30:7), pp. 805-816.
- Griffith, D. A., Hoppner, J. J., Lee, H. S., and Schoenherr, T. 2017. "The Influence of the Structure of Interdependence on the Response to Inequity in Buyer-Supplier Relationships," *Journal of Marketing Research* (54:1), pp. 124-137.
- Gulati, R., and Sych, M. 2007. "Dependence Asymmetry and Joint Dependence in Interorganizational Relationships: Effects of Embeddedness on a Manufacturer's Performance in Procurement Relationships," *Administrative Science Quarterly* (52:1), pp. 32-69.
- Hair, J. F., Hult, G. T. M., Ringle, C., and Sarstedt, M. 2017. *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Los Angeles: Sage Publications.
- Hair, J. F., Ringle, C. M., and Sarstedt, M. 2011. "PLS-SEM: Indeed a Silver Bullet," *Journal of Marketing Theory and Practice* (19:2), pp. 139-152.
- Han, L., Rathindra, S., Jie, Z., and Xin, L. 2014. "Exploring the Effects of Organizational Justice, Personal Ethics and Sanction on Internet Use Policy Compliance," *Information Systems Journal* (24:6), pp. 479-502.
- Harris, K. E., Mohr, L. A., and Bernhardt, K. L. 2006. "Online Service Failure, Consumer Attributions and Expectations," *Journal of Services Marketing* (20:7), pp. 453-458.

- Heide, J. B., and Miner, A. S. 1992. "The Shadow of the Future: Effects of Anticipated Interaction and Frequency of Contact on Buyer-Seller Cooperation," *Academy of Management Journal* (35:2), pp. 265-291.
- Heidenreich, S., Wittkowski, K., Handrich, M., and Falk, T. 2015. "The Dark Side of Customer Co-Creation: Exploring the Consequences of Failed Co-Created Services," *Journal of the Academy of Marketing Science* (43:3), pp. 279-296.
- Henseler, J., Ringle, C. M., and Sinkovics, R. R. 2009a. "The Use of Partial Least Squares Path Modeling in International Marketing," in: *New Challenges to International Marketing*. Emerald Group Publishing Limited, pp. 277-319.
- Henseler, J., Ringle, C. M., and Sinkovics, R. R. 2009b. "The Use of Partial Least Squares Path Modeling in International Marketing," *New Challenges to International Marketing* (20), pp. 277-319.
- Hulland, J., Baumgartner, H., and Smith, K. M. 2018. "Marketing Survey Research Best Practices: Evidence and Recommendations from a Review of Jams Articles," *Journal of the Academy of Marketing Science* (46:1), pp. 92-108.
- Hunt, S. D., and Nevin, J. R. 1974. "Power in a Channel of Distribution: Sources and Consequences," *Journal of Marketing Research* (11:2), pp. 186-193.
- IBM. 2009. "2008 Annual Report." Retrieved 2019-04-08, from ftp://ftp.software.ibm.com/annualreport/2008/2008_ibm_annual.pdf.
- IBM. 2019. "2018 Annual Report." Retrieved 2019-04-08, from https://www.ibm.com/annualreport/assets/downloads/IBM_Annual_Report_2018.pdf.
- Johnston, W. J., and Lewin, J. E. 1996. "Organizational Buying Behavior: Toward an Integrative Framework," *Journal of Business Research* (35:1), pp. 1-15.
- Karpen, I. O., Bove, L. L., Lukas, B. A., and Zyphur, M. J. 2015. "Service-Dominant Orientation: Measurement and Impact on Performance Outcomes," *Journal of Retailing* (91:1), pp. 89-108.
- Kelly, S., and Scott, D. 2012. "Relationship Benefits: Conceptualization and Measurement in a Business-to-Business Environment," *International Small Business Journal* (30:3), pp. 310-339.
- Kenny, D. A. 2015. "Moderator Variables." Retrieved 2017-11-02, from <http://davidakenny.net/cm/moderation.htm>.
- Kock, N. 2015. "Common Method Bias in PLS-SEM: A Full Collinearity Assessment Approach," *International Journal of e-Collaboration (IJeC)* (11:4), pp. 1-10.
- Kumar, N., Scheer, L. K., and Steenkamp, J.-B. E. M. 1995. "The Effects of Perceived Interdependence on Dealer Attitudes," *Journal of Marketing Research* (32:3), pp. 348-356.
- Lacity, M., and Willcocks, L. 2017. "Conflict Resolution in Business Services Outsourcing Relationships," *The Journal of Strategic Information Systems* (26:2), pp. 80-100.
- Lacoste, S. 2016. "Sustainable Value Co-Creation in Business Networks," *Industrial Marketing Management* (52), pp. 151-162.
- Langer, N., Forman, C., Kekre, S., and Sun, B. 2012. "Ushering Buyers into Electronic Channels: An Empirical Analysis," *Information Systems Research* (23:4), pp. 1212-1231.
- Lässig, R., Leutiger, P., Fey, A., Hentschel, S., Tornier, S., and Hirt, F. 2015. "The Digital Future of B2B Sales."
- Lee, C.-J., and Johnsen, R. E. 2012. "Asymmetric Customer-Supplier Relationship Development in Taiwanese Electronics Firms," *Industrial Marketing Management* (41:4), pp. 692-705.
- Lewis, M. O., Mathiassen, L., and Rai, A. 2011. "Scalable Growth in It-Enabled Service Provisioning: A Sensemaking Perspective," *European Journal of Information Systems* (20:3), pp. 285-302.
- Lichtenthal, J. D., and Mummalaeni, V. 2009. "Commentary: Relative Presence of Business-to-Business Research in the Marketing Literature: Review and Future Directions," *Journal of Business-to-Business Marketing* (16:1-2), pp. 40-54.
- Lindell, M. K., and Whitney, D. J. 2001. "Accounting for Common Method Variance in Cross-Sectional Research Designs," *Journal of Applied Psychology* (86:1), pp. 114-121.
- Lusch, R. F. 1976. "Sources of Power: Their Impact on Intrachannel Conflict," *Journal of Marketing Research* (13:4), pp. 382-390.

- Lusch, R. F., and Nambisan, S. 2015. "Service Innovation: A Service-Dominant Logic Perspective," *MIS Quarterly* (39:1), pp. 155-176.
- Lusch, R. F., and Vargo, S. L. 2014. *Service-Dominant Logic: Premises, Perspectives, Possibilities*. Cambridge University Press.
- Lusch, R. F., Vargo, S. L., and O'Brien, M. 2007. "Competing through Service: Insights from Service-Dominant Logic," *Journal of Retailing* (83:1), pp. 5-18.
- MacKenzie, S. B., Podsakoff, P. M., and Podsakoff, N. P. 2011. "Construct Measurement and Validation Procedures in Mis and Behavioral Research: Integrating New and Existing Techniques," *MIS Quarterly* (35:2), pp. 293-334.
- Maglio, P. P., and Spohrer, J. 2008. "Fundamentals of Service Science," *Journal of the Academy of Marketing Science* (36:1), pp. 18-20.
- McKinsey. 2019. "Solutions." Retrieved 2019-04-15, from <https://www.mckinsey.com/solutions>.
- Meuter, M. L., Ostrom, A. L., Roundtree, R. I., and Bitner, M. J. 2000. "Self-Service Technologies: Understanding Customer Satisfaction with Technology-Based Service Encounters," *Journal of Marketing* (64:3), pp. 50-64.
- Moon, S. K., Shu, J., Simpson, T. W., and Kumara, S. R. T. 2010. "A Module-Based Service Model for Mass Customization: Service Family Design," *IIE Transactions* (43:3), pp. 153-163.
- Morgan, R., Doran, D., and Morgan, S. J. 2018. "Strong Contracts: The Relationship between Power and Action," *International Journal of Operations & Production Management* (38:1), pp. 272-294.
- Myers, M. D., and Newman, M. 2007. "The Qualitative Interview in IS Research: Examining the Craft," *Information and organization* (17:1), pp. 2-26.
- Nambisan, S. 2002. "Designing Virtual Customer Environments for New Product Development: Toward a Theory," *Academy of Management Review* (27:3), pp. 392-413.
- Nambisan, S., and Baron, R. A. 2009. "Virtual Customer Environments: Testing a Model of Voluntary Participation in Value Co-Creation Activities," *Journal of Product Innovation Management* (26:4), pp. 388-406.
- Nambisan, S., Lyytinen, K., Majchrzak, A., and Song, M. 2017. "Digital Innovation Management: Reinventing Innovation Management Research in a Digital World," *MIS Quarterly* (41:1), pp. 223-238.
- Nelson, R. R., Todd, P. A., and Wixom, B. H. 2005. "Antecedents of Information and System Quality: An Empirical Examination within the Context of Data Warehousing," *Journal of Management Information Systems* (21:4), pp. 199-235.
- Ostrom, A. L., Bitner, M. J., Brown, S. W., Burkhard, K. A., Goul, M., Smith-Daniels, V., Demirkan, H., and Rabinovich, E. 2010. "Moving Forward and Making a Difference: Research Priorities for the Science of Service," *Journal of Service Research* (13:1), pp. 4-36.
- Ostrom, A. L., Parasuraman, A., Bowen, D. E., Patrício, L., and Voss, C. A. 2015. "Service Research Priorities in a Rapidly Changing Context," *Journal of Service Research* (18:2), pp. 127-159.
- Palmatier, R. W. 2008. "Interfirm Relational Drivers of Customer Value," *Journal of Marketing* (72:4), pp. 76-89.
- Palmatier, R. W., Dant, R. P., and Grewal, D. 2007. "A Comparative Longitudinal Analysis of Theoretical Perspectives of Interorganizational Relationship Performance," *Journal of Marketing* (71:4), pp. 172-194.
- Palmatier, R. W., Dant, R. P., Grewal, D., and Evans, K. R. 2006. "Factors Influencing the Effectiveness of Relationship Marketing: A Meta-Analysis," *Journal of Marketing* (70:4), pp. 136-153.
- Paluch, S., and Wunderlich, N. V. 2016. "Contrasting Risk Perceptions of Technology-Based Service Innovations in Inter-Organizational Settings," *Journal of Business Research* (69:7), pp. 2424-2431.
- Panagopoulos, N. G., Rapp, A. A., and Ogilvie, J. L. 2017. "Salesperson Solution Involvement and Sales Performance: The Contingent Role of Supplier Firm and Customer-Supplier Relationship Characteristics," *Journal of Marketing* (81:4), pp. 144-164.
- Pavlou, P. A., Liang, H., and Xue, Y. 2007. "Understanding and Mitigating Uncertainty in Online Exchange Relationships: A Principal-Agent Perspective," *MIS Quarterly* (31:1), pp. 105-136.

- Peters, C., Blohm, I., and Leimeister, J. M. 2015. "Anatomy of Successful Business Models for Complex Services: Insights from the Telemedicine Field," *Journal of Management Information Systems* (32:3), pp. 75-104.
- Pilehvar, A., Elmaghraby, W. J., and Gopal, A. 2016. "Market Information and Bidder Heterogeneity in Secondary Market Online B2B Auctions," *Management Science* (63:5), pp. 1493-1518.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., and Podsakoff, N. P. 2003. "Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies," *Journal of Applied Psychology* (88:5), pp. 879-903.
- Rahikka, E., Ulkuniemi, P., and Pekkarinen, S. 2011. "Developing the Value Perception of the Business Customer through Service Modularity," *Journal of Business & Industrial Marketing* (26:5), pp. 357-367.
- Rai, A., and Sambamurthy, V. 2006. "Editorial Notes—the Growth of Interest in Services Management: Opportunities for Information Systems Scholars," *Information Systems Research* (17:4), pp. 327-331.
- Rai, A., and Tang, X. 2014. "Information Technology-Enabled Business Models: A Conceptual Framework and a Coevolution Perspective for Future Research," *Information Systems Research* (25:1), pp. 1-14.
- Ramani, G., and Kumar, V. 2008. "Interaction Orientation and Firm Performance," *Journal of Marketing* (72:1), pp. 27-45.
- Ravichandran, T., and Rai, A. 2000. "Quality Management in Systems Development: An Organizational System Perspective," *MIS Quarterly* (24:3), pp. 381-415.
- Rindt, J., and Mouzas, S. 2015. "Exercising Power in Asymmetric Relationships: The Use of Private Rules," *Industrial Marketing Management* (48), pp. 202-213.
- Ringle, C. M., Wende, S., and Becker, J.-M. 2015. "SmartPLS 3." SmartPLS GmbH.
- Rönkkö, M., and Evermann, J. 2013. "A Critical Examination of Common Beliefs About Partial Least Squares Path Modeling," *Organizational Research Methods* (16:3), pp. 425-448.
- Sambamurthy, V., Bharadwaj, A., and Grover, V. 2003. "Shaping Agility through Digital Options: Reconceptualizing the Role of Information Technology in Contemporary Firms," *MIS Quarterly* (27:2), pp. 237-263.
- Sanchez, G., Trinchera, L., and Russolillo, G. 2017. Retrieved 2019-05-08, from <https://cran.r-project.org/package=plspm>.
- Sawhney, M., Verona, G., and Prandelli, E. 2005. "Collaborating to Create: The Internet as a Platform for Customer Engagement in Product Innovation," *Journal of Interactive Marketing* (19:4), pp. 4-17.
- Scherer, A., Wunderlich, N. V., and von Wangenheim, F. 2015. "The Value of Self-Service: Long-Term Effects of Technology-Based Self-Service Usage on Customer Retention," *MIS Quarterly* (39:1), pp. 177-200.
- Schmitz, T., Schweiger, B., and Daft, J. 2016. "The Emergence of Dependence and Lock-in Effects in Buyer–Supplier Relationships — a Buyer Perspective," *Industrial Marketing Management* (55), pp. 22-34.
- Sharma, S., Durand, R. M., and Gur-Arie, O. 1981. "Identification and Analysis of Moderator Variables," *Journal of Marketing Research* (18:3), pp. 291-300.
- Skinner, S. J., Gassenheimer, J. B., and Kelley, S. W. 1992. "Cooperation in Supplier-Dealer Relations," *Journal of Retailing* (68:2), pp. 174-193.
- Song, M., Dyer, B., and Thieme, R. J. 2006. "Conflict Management and Innovation Performance: An Integrated Contingency Perspective," *Journal of the Academy of Marketing Science* (34:3), pp. 341-356.
- Spohrer, J. 2016. "Ibm's Service Journey: A Summary Sketch," *Industrial Marketing Management* (60), pp. 167-172.
- Srivastava, S. C., and Shainesh, G. 2015. "Bridging the Service Divide through Digitally Enabled Service Innovations: Evidence from Indian Healthcare Service Providers," *MIS Quarterly* (39:1), pp. 245-267.
- Stock, R. M., and Zacharias, N. A. 2011. "Patterns and Performance Outcomes of Innovation Orientation," *Journal of the Academy of Marketing Science* (39:6), pp. 870-888.

- Stock, R. M., and Zacharias, N. A. 2013. "Two Sides of the Same Coin: How Do Different Dimensions of Product Program Innovativeness Affect Customer Loyalty?," *Journal of Product Innovation Management* (30:3), pp. 516-532.
- Stoffer, T. 2019. "Leveraging the Value of Cocreation During Service Provisions through Digitalization – an Empirical Investigation in the B2B Context." Working Paper.
- Stoffer, T., Widjaja, T., and Zacharias, N. 2018a. "The Diverging Effect of Digitalization on Perceived Relational Conflict During Service Provisions – an Empirical Comparison of Suppliers and Customers in the B2B Context," *Proceedings of International Conference on Information Systems (ICIS 2018)*, San Francisco, USA.
- Stoffer, T., Widjaja, T., and Zacharias, N. 2018b. "The Effect of Service Modularity on Flexibility in the Digital Age – an Investigation in the B2B Context," Cham: Springer International Publishing, pp. 3-15.
- Stoffer, T., Widjaja, T., and Zacharias, N. 2019. "The Dark Side of Sales and Service Digitalization: Do They Amplify the Impact of Coercive Power Use on Relational Conflict in B2B Relationships?." Working Paper.
- Thibaut, J. W., and Walker, L. 1975. *Procedural Justice: A Psychological Analysis*. L. Erlbaum Associates.
- Van den Abbeele, A., Roodhooft, F., and Warlop, L. 2009. "The Effect of Cost Information on Buyer–Supplier Negotiations in Different Power Settings," *Accounting, Organizations and Society* (34:2), pp. 245-266.
- Vargo, S. L. 2009. "Toward a Transcending Conceptualization of Relationship: A Service-Dominant Logic Perspective," *Journal of Business & Industrial Marketing* (24:5/6), pp. 373-379.
- Vargo, S. L., and Lusch, R. F. 2004a. "Evolving to a New Dominant Logic for Marketing," *Journal of Marketing* (68:1), pp. 1-17.
- Vargo, S. L., and Lusch, R. F. 2004b. "The Four Service Marketing Myths: Remnants of a Goods-Based, Manufacturing Model," *Journal of Service Research* (6:4), pp. 324-335.
- Vargo, S. L., and Lusch, R. F. 2008. "Service-Dominant Logic: Continuing the Evolution," *Journal of the Academy of Marketing Science* (36:1), pp. 1-10.
- Vargo, S. L., and Lusch, R. F. 2016. "Institutions and Axioms: An Extension and Update of Service-Dominant Logic," *Journal of the Academy of Marketing Science* (44:1), pp. 5-23.
- Vargo, S. L., and Lusch, R. F. 2017. "Service-Dominant Logic 2025," *International Journal of Research in Marketing* (34:1), pp. 46-67.
- Vickery, S. K., Koufteros, X., Dröge, C., and Calantone, R. 2016. "Product Modularity, Process Modularity, and New Product Introduction Performance: Does Complexity Matter?," *Production and Operations Management* (25:4), pp. 751-770.
- vom Brocke, J., Simons, A., Riemer, K., Niehaves, B., Plattfaut, R., and Cleven, A. 2015. "Standing on the Shoulders of Giants: Challenges and Recommendations of Literature Search in Information Systems Research," *Communications of the Association for Information Systems* (37:9), pp. 205-224.
- Vosgerau, J., Anderson, E., and Ross, W. T. 2008. "Can Inaccurate Perceptions in Business-to-Business (B2B) Relationships Be Beneficial?," *Marketing Science* (27:2), pp. 205-224.
- Waarts, E., van Everdingen, Y. M., and van Hilleegersberg, J. 2002. "The Dynamics of Factors Affecting the Adoption of Innovations," *Journal of Product Innovation Management* (19:6), pp. 412-423.
- Webster, J., and Watson, R. T. 2002. "Analyzing the Past to Prepare for the Future: Writing a Literature Review," *MIS Quarterly* (26:2), pp. xiii-xxiii.
- Wold, H. 1966. "Estimation of Principal Components and Related Models by Iterative Least Squares," in: *Multivariate Analysis*, P.R. Krishnaiah (ed.). New York: Academic Press, pp. 391-420.
- World Economic Forum. 2017. "Digital Transformation Initiative – Professional Services Industry."
- Xue, L., Zhang, C., Ling, H., and Zhao, X. 2013. "Risk Mitigation in Supply Chain Digitization: System Modularity and Information Technology Governance," *Journal of Management Information Systems* (30:1), pp. 325-352.

- Yin, R. K. 2013. *Case Study Research: Design and Methods*, (4 ed.). Thousand Oaks: Sage publications.
- Yoo, Y. 2013. "The Tables Have Turned: How Can the Information Systems Field Contribute to Technology and Innovation Management Research?," *Journal of the Association for Information Systems* (14:5), pp. 227-236.
- Zhang, C., Zhuang, G., Yang, Z., and Zhang, Y. 2017. "Brand Loyalty Versus Store Loyalty: Consumers' Role in Determining Dependence Structure of Supplier-Retailer Dyads," *Journal of Business-to-Business Marketing* (24:2), pp. 139-160.
- Zhu, Z., Nakata, C., Sivakumar, K., and Grewal, D. 2013. "Fix It or Leave It? Customer Recovery from Self-Service Technology Failures," *Journal of Retailing* (89:1), pp. 15-29.
- Zhuang, G., Xi, Y., and Tsang, A. S. L. 2010. "Power, Conflict, and Cooperation: The Impact of Guanxi in Chinese Marketing Channels," *Industrial Marketing Management* (39:1), pp. 137-149.

The Effect of Service Modularity on Flexibility in the Digital Age – An Investigation in the B2B Context

Authors: Torben Stoffer, University of Passau, Germany
Thomas Widjaja, University of Passau, Germany
Nicolas Zacharias, Martin Luther University Halle-Wittenberg Halle (Saale),
Germany

Presented at: – Information System Brown-Bag Seminar, 2018, Passau, Germany.
– Research Colloquium Information System, 2018, Frankfurt, Germany.
– International Conference on Exploring Service Science (IESS), 2018,
Karlsruhe, Germany.
Awarded with the “Best Paper Award”.

Published in: Lecture Notes in Business Information Processing (VHB-JQ3 rating: C).

Abstract

The goal of this study is to investigate the moderating role of digitalization on the well-known positive effect of service modularity on service flexibility. This is important since research findings on the role of service digitalization in this context are scarce and still equivocal. Following research on digital business strategy, we propose and provide empirical evidence that service digitalization positively moderates the effect of service modularization on service flexibility. By doing this, we furthermore enhance this research by considering service digitalization as a continuum ranging from low (i.e., services mainly provided by personnel) to high (i.e., services mainly provided by IT). In addition, we show that service flexibility has a positive effect on service value which is an important factor for firms' market success. Hereby we aim to contribute to research on service modularization and technology management. Our research is based on survey-data of 147 companies offering IT services in the B2B context and is analyzed using the partial least square method.



The Effect of Service Modularity on Flexibility in the Digital Age – An Investigation in the B2B Context

Torben Stoffer¹(✉), Thomas Widjaja¹, and Nicolas Zacharias²

¹ University of Passau, Innstraße 41, 94032 Passau, Germany
{torben.stoffer, thomas.widjaja}@uni-passau.de

² TU Darmstadt, Karolinenplatz 5, 64289 Darmstadt, Germany
zacharias@bwl.tu-darmstadt.de

Abstract. The goal of this study is to investigate the moderating role of digitalization on the well-known positive effect of service modularity on service flexibility. This is important since research findings on the role of service digitalization in this context are scarce and still equivocal. Following research on digital business strategy, we propose and provide empirical evidence that service digitalization positively moderates the effect of service modularization on service flexibility. By doing this, we furthermore enhance this research by considering service digitalization as a continuum ranging from low (i.e., services mainly provided by personnel) to high (i.e., services mainly provided by IT). In addition, we show that service flexibility has a positive effect on service value which is an important factor for firms' market success. Hereby we aim to contribute to research on service modularization and technology management. Our research is based on survey-data of 147 companies offering IT services in the B2B context and is analyzed using the partial least square method.

Keywords: Service modularity · Service flexibility · Service digitalization
B2B · PLS

1 Introduction

In recent years, suppliers of business-to-business (B2B) services have continuously increased the number of digital services in their portfolios by creating new digital services or altering the degree of digitalization of existing services. An example for the alteration of existing services are the McKinsey Solutions which comprise services (e.g., assessment of firms' competitive position) that have traditionally been performed by consultants (i.e., low degree of digitalization) and are now offered completely digitally. Due to this development, it is of high practical and theoretical relevance to understand which parts of our knowledge on service design can be transferred to or have to be adjusted in the context of digital services. Our study aims to contribute to this endeavor by focusing on the moderating role of digitalization on the well-known effect of service modularity on service flexibility (cf., Fig. 1 for our research model) [1].

In this study, we propose to conceptualize service digitalization a continuum ranging from no digitalization to completely digital services. This is in line with, for

example, Froehle and Roth [2] as well as Böhmann et al. [3] who suggest that services are provided by making use of personnel and/or IT resources. Following this way of thinking, we define service digitalization as the degree to which the service is provided by IT instead of personnel. Surprisingly, extant literature often has treated service digitalization as a binary concept and focused only on general changes by a high degree of service digitalization (e.g., customer self-service) in comparison to traditional service provisions (e.g., as a personal service) [4, 5]. Therefore, this more nuanced view on service digitalization offers possibilities to add to the understanding of the effects of different degrees of service digitalization.

As stated above, we are focusing on the moderating role of service digitalization on the effect of service modularity on service flexibility. In line with Baldwin and Clark [6] and Vickery et al. [7], we define *service modularity* as the degree to which services consist of service modules that are designed independently to offer a specific functionality. An example for the modularization of a digital service is the analysis of big data by Amazon Web Services. The service modules comprise different analytic frameworks and databases which are used in combination to provide the complete service (i.e., big data analysis). Beside other effects of service modularity (e.g., reduction of cost [8], complexity [9], and risks [1]), extant literature especially highlights the positive effect of service modularization on service flexibility [10]. *Service flexibility* is defined as the suppliers' extent of possibilities to provide different services [11–14].

However, the influence of service digitalization on the relationship between service modularization and service flexibility remains unclear. On the one hand, extant literature highlights the positive effect of service modularization on service flexibility both for services with a low degree of digitalization [15] and services with a high degree of digitalization [16]. On the other hand, literature in the context of digital business strategy posits that modularization offers unprecedented magnitudes of flexibility in combination with digitalization [17, 18]. Therefore, it remains unclear if and how service digitalization influences service modularity. This leads to our research question:

RQ: Does service digitalization moderate the effect between service modularity and service flexibility?

We are aware that service flexibility itself cannot be a primary objective for service suppliers. Therefore, to underscore the practical relevance of our research, we include service value as an important effect of service flexibility in our research model. Following Stock and Zacharias [19], we define *service value* as the superiority of a service in terms of its quality and benefits for the customer. As customer needs are heterogeneous and change over time especially in the B2B context [20], suppliers have to offer services of high value to succeed in the market.

With our research we aim to contribute in three ways. First, we contribute to technology and innovation management research [4, 17, 18, 21], by elaborating on the interplay of service modularization and service digitalization. In particular, we provide insights following the conceptual thoughts of Yoo [17] and Bharadwaj et al. [18]. As services can take various degrees of digitalization, we provide generalized insights on the effect of digitalization on service modularity, which is in line with Nambisan et al. [4] and Iman [21]. Second, we add to the growing research of service modularization [22] by enhancing the understanding of the effect of service modularization on service

flexibility in the B2B context. Third, our results help practitioners offering services in the B2B context as well. Suppliers that want to maximize the success of their services can benefit from the results by reconsidering the modularization of their services against the background of the services' degree of digitalization.

The remainder of this paper is structured as follows: The next section introduces the extant research on service modularity and the conceptualization of service digitalization. Then, the research model is developed. The fourth section describes the survey-based sample, comprising 147 companies offering B2B IT services, and the constructs' conceptualization. Afterwards, the research model is assessed. The paper concludes with the discussion, limitations, and recommendations for future research.

2 Conceptual Background

The conceptual background of this paper is divided in two sub-sections. First, we discuss the extant literature on service modularity and, second, we introduce the concept of service digitalization.

2.1 Service Modularity

We build upon early work of Sundbo [23], where he introduces the concept of service modularity and proposes that service modularity could ease the trade-off between standardization and customization. In line with Baldwin and Clark [6] as well as Vickery et al. [7], we define *service modularity* as the degree to which services consist of service modules that are designed independently to offer a specific functionality. Hence, a higher degree of service modularity can be achieved by breaking down services into self-contained service modules [21]. Then, these service modules can be flexibly recombined to provide the respective service which is also known as mixing-and-matching [22, 24, 25].

Extant literature has highlighted various effects of service modularity (e.g., fostering innovation, effective division of labor, mitigating the risks of service adoption, and enhancing customization). Due to the flexible recombination of service modules, suppliers have various options to compose innovative services and can avoid the re-invention of already existing service modules. Hence, service modularity fosters innovation [22] and enables suppliers to effectively divide labor among different actors [17]. For example, a consulting service offering a specific strategic planning for a customer could be divided into service modules regarding the consultants' technical skills which are necessary for the consecutive phases of the service provision (i.e., fact gathering, data analysis, and strategy definition). Thus, this improvement, achieved by service modularity, reduces costs in operations as well as functionality [9]. Xue et al. [1] argue that service modularity mitigates the risk of adopting digital supply chain services by reducing the risks perceived by organizational decision makers regarding the desirable outcomes of the services. One of the most important effects of service modularity highlighted in literature is service flexibility [10]. *Service flexibility* is defined as the suppliers' extent of possibilities to provide different services [11–14] and is achieved by the flexible recombination of service modules [26, 27].

2.2 Service Digitalization

Froehle and Roth [2] classify services based on the role of technology used during the service provision. Analogously Böhmman et al. [3] state that personnel and/or IT resources are used during service provisions. Based on these conceptualizations, we define *service digitalization* as the degree to which the service is provided by IT instead of personnel. Hence, the degree of service digitalization can range from *low*, where the service is mainly provided by personnel (e.g., a consulting service, where the service provision consists of the consultants' work in the first place), to *high*, where the service is mainly provided by IT (e.g., software as a service, which is offered as a self-service with the result that, on the supplier's side, mainly soft- and hardware is involved in the service provision). Additionally, as our conceptualization of service digitalization is a continuum, it can take all intermediate forms between the two anchors (e.g., a project management service, which consists of a consultant's work and a complementary software which is operated by the supplier and used by the customer).

Literature has identified different effects of service digitalization which are related to our research model. Conceptual literature has emphasized the possibilities of digital services for service flexibility [17]. This flexibility of digital services can be achieved by a rapid recombination of service modules without sacrificing cost or quality [25]. The same idea has been pursued by Sambamurthy et al. [28] who state in the domain of organizational IT that suppliers can succeed in competition through agility which is inherent in IT.

3 Research Model and Hypotheses Development

The research model, as illustrated in Fig. 1, contains three hypotheses which are explained in the following. In addition, we include three control variables (i.e., investment cost, firm age, revenue) for our focal construct service flexibility.

Service modularity reflects the degree to which services consist of service modules that are designed independently to offer a specific functionality [6, 7]. For specific service provisions, these distinct service modules are recombined to provide the respective services that are offered to customers [22, 24]. This recombination, also known as mixing-and-matching, comprises the selection of different service modules and/or service modules' sequences [8, 25]. Hence, by making use of service modularity, suppliers increase the flexibility of their service offerings [29]. As the introductory Amazon Web Services example illustrates, the analysis of big data is separated into different service modules (e.g., different analytic frameworks and databases). The different analytic frameworks (e.g., Amazon EMR, Amazon Elasticsearch Service) are combined with different databases (e.g., Amazon DynamoDB, Amazon RDS) to provide the service (i.e., big data analytics). As a consequence, Amazon Web Services achieve a high service flexibility through service modularity. Hence, we hypothesize:

H1: Service modularity is positively associated with service flexibility.

Literature has found a positive effect of service modularity on service flexibility both for services with a low [15] and high degree of digitalization [16], but neglects the

possible moderating role of service digitalization on the effect of service modularization. Conceptual literature on service digitalization keeps emphasizing that digital services offer unprecedented possibilities of service flexibility [17] in comparison to services provided by personnel. To address this equivocal relationship, we propose a positive moderating effect of service digitalization on the relationship between service modularization and service flexibility. Service digitalization reflects the degree to which the service is provided by IT instead of personnel. Especially, services provided by IT to a major part enable suppliers to rapidly recombine service modules without sacrificing cost or quality [25]. The positive effect of service digitalization on the relationship between service modularity and service flexibility (cf., H1) can, for example and among others, be achieved by time- and location-independence of the service provision, service scalability, and possibilities of automatic recombination of the service modules. Scalability, which is inherent in digital services, facilitates the provision of services for a growing number of customers without an increase in cost. Hence, it increases the service flexibility for a given level of service modularization [16]. Chan et al. [30] have shown that customer participation to foster service customization can create job stress when the services are provided by personnel because of their loss of power and control, increased input uncertainties, and incompatible demands and expectations. The same accounts for service modularity and leads to a stronger increase in service flexibility of services provided mainly by IT in comparison to services provided mainly by personnel. Hence, the effect of service modularity on service flexibility is larger for services with a high degree of digitalization than for services with a low degree of digitalization. This leads to our second hypothesis:

H2: An increase in service digitalization positively moderates the effect of service modularity on service flexibility.

To succeed in the market, services have to generate value for the customers [5]. Service value reflects the superiority of a service in terms of its quality and benefits for the customer [19]. As, especially in the B2B context, customer needs are heterogeneous and change over time [20], service flexibility enables suppliers to offer superior services. This is achieved by the suppliers' increased responsiveness to misalignments during service provisions and to new market opportunities [31]. Thus, we hypothesize:

H3: Service flexibility is positively associated with service value.

4 Methodology

A survey among representatives of 147 IT suppliers was conducted in September and October 2017. By addressing the companies' sales managers and consultants, we relied on the key informant approach [32]. Sales manager and consultants, who are involved in the marketing of the IT services and/or their provision, should be knowledgeable about the characteristics of the offered services and business relationships as well as about general company characteristics used as control variables.

4.1 Sample

At the beginning of the survey, the participants had to self-report their level of knowledge about the suppliers' marketing activities as well as offered services and only representatives with a sufficient level were included in the study. In cooperation with a market research firm, we collected responses from representatives of 147 suppliers of IT services. Out of these representatives, 51% were consultants, 27% sales managers, and 12% general managers. In average, the representatives were working in their respective position for 8 years. The main offerings of the companies were IT system integration services (40%), IT infrastructure services (26%), business process services (19%), and general consulting services (9%). That guarantees a variety of services regarding their degree of digitalization. The companies had at least 50 and in average 3,200 employees.

4.2 Construct Conceptualization

At the beginning of the survey, all participants were asked to choose a service that they had offered to a customer, which could have finally adopted the service or not, during the last six months and to describe the chosen service in detail. Afterwards they were instructed to answer all questions against the background of that service and customer relationship respectively.

For the measurement items, standard scale development procedures were applied, including the conduction of a comprehensive literature review. For all constructs except service digitalization existing measurement items were used which were modified or further developed when necessary to match the study's context (cf., Table 1 in the Appendix). As there is no established measurement for service digitalization in the literature, a new scale was developed for measuring that construct. Service digitalization, that is the degree of service provision which is done by IT, reflects a concrete service characteristic, which can be suitably measured with a single item [33, 34]. The measurement was inspired by literature [2, 3] and discussed as well as validated in multiple interviews with practitioners.

All items were pretested in interviews with twelve independent researchers and practitioners as well as by investigating the answers of the first 30 participants, which in combination ensured final clarity of the items' formulations.

5 Results

To analyze our data, we use the variance-based partial least squares (PLS) method. PLS is chosen as it is especially suited for exploratory research [35], which applies to our investigation of the effect of service digitalization on the relationship between service modularization and service flexibility.

5.1 Measurement Model Assessment

The assessment of the measurement model's psychometric properties includes testing of convergent validity, discriminant validity, and internal consistency reliability [36]. Additionally, we test for the common method bias [37].

To ensure convergent validity, the item loadings and the average variance extracted (AVE) are assessed (cf., Table 2 in the Appendix). In general, the outer loadings of the items on their respective construct should exceed 0.7 [35, 38] which is the case for all items. On the construct level, the AVE is considered to ensure convergent validity. The smallest AVE of the constructs is 0.580 (service value) and, hence, all AVE values exceed the recommended threshold of 0.5 [35].

Discriminant validity is given when the items' loadings are greater than their cross-loadings on other constructs [39], the Fornell-Larcker criterion is met [40], and the constructs' heterotrait-monotrait ratios (HTMT) do not exceed the given threshold of 0.90 [41]. The first criterion, investigating the item level, is established as all items load higher on their respective construct than on any other construct. On the construct level, the Fornell-Larcker criterion [40] and the HTMT are applied. As shown in Table 3 in the Appendix, the Fornell-Larcker criterion is fulfilled for all constructs. Additionally, all constructs' HTMT values (highest value of 0.405) meet the threshold of 0.85 [41]. In summary, discriminant validity can be assumed.

Internal consistency reliability comprises the assessment of Cronbach's α and composite reliability (CR). The values of Cronbach's α and CR should meet the lower threshold of 0.7 [39]. As this is the case for all constructs (cf., Table 2 in the Appendix), internal consistency reliability is also met.

Lastly, we include a marker variable in our survey to test for a potential common method bias [37]. The results of the correlation analysis do not indicate any significant correlations between the marker variable and the other variables and, hence, the test does not show any indication for the existence of the common method bias [42].

5.2 Structural Model Assessment

After ensuring the validity of the measurement model, first, the estimated structural model (cf., Fig. 1) is analyzed and, second, the hypothesized relationships are assessed. To address potential collinearity issues between the exogenous latent variables, the Variance Inflation Factors (VIF) are examined. All VIF values are well below the threshold of 5 [35, 43], with the highest VIF value in our data being 1.326. Hence, collinearity seems not to be an issue. To assess the significances of the path coefficients, a bootstrap procedure with 5,000 samples is performed. The impact of all control variables is not significant. In addition to testing the main model as described below, we perform supplemental analyses which consider a direct effect between service digitalization and service modularity as well as service value respectively. All results show to be robust towards these additional constraints.

The effect of service modularity on service flexibility equals 0.297 and is significant (p-value of 0.001). Hence, H1 is supported. Our RQ aims at investigating the significance of the moderating effect of service digitalization on the positive relationship between service modularity and service flexibility. Hence, by following the suggestions

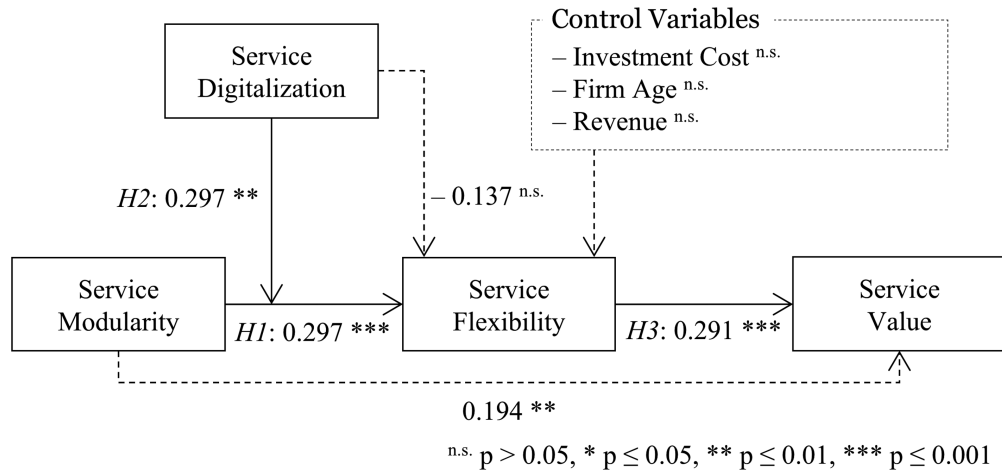


Fig. 1. Results of the estimated structural model.

of Henseler and Chin [44], the moderation (i.e., interaction term between service digitalization and service modularity) was modelled via the two-stage approach. To test the moderation (i.e., H2), we followed Hair et al. [36] and Sharma et al. [45]. The positive moderating effect of service digitalization is significant (p-value of 0.045). Following Henseler and Fassott [46], the f^2 value reflects the moderator's effect size. In our study, the f^2 effect size equals 0.090 which is considered as a large effect (threshold of 0.025 [36, 47]). The direct effect between service digitalization (i.e., the moderator and predictor variable) and service flexibility (i.e. the criterion variable) is not significant (p-value of 0.084). Hence, we can confirm a “pure moderator” [45], which fully supports the hypothesis (cf., H2) that service digitalization positively moderates the effect of service modularization on service flexibility. Furthermore, the effect of service flexibility on service value (i.e., H3) equals 0.291 and is significant (p-value of 0.001). Thus, our results strengthen the importance of service flexibility for service value and, in turn, the suppliers' market success.¹

6 Discussion, Limitations, and Future Research

Based on an empirical model, we have shown that service digitalization positively moderates the positive relationship between service modularity and service flexibility and that service flexibility, again, is positively associated with service value. Hence, the results provide implications for research on service modularization and technology and innovation management research as well as managerial practice.

¹ Due to the significantly positive effect between service modularization and service value (cf., Fig. 1), we additionally can confirm a complementary mediation [48].

First, by considering service digitalization as a moderator for the effect of service modularization on service flexibility, we have extended the equivocal results of extant research stating that service modularity positively influences service flexibility both for services with a low degree of digitalization [15] and services with a high degree of digitalization [16]. Hence, in contrast to intuition, we showed that the advantages for service flexibility caused by digitalization outweigh the advantages for service flexibility caused by personnel. Additionally, by doing this, we have empirically underpinned the conceptual thoughts of Yoo [17] and Bharadwaj et al. [18] stressing that service digitalization offers unprecedented possibilities of service flexibility. Furthermore, we respond to Nambisan et al. [4], who call upon considering digitalization as an influencer of service modularity and not only as a mere context, and Iman [21], who recommends to investigate services in general instead of limiting the research to one degree of digitalization. Second, we respond to the call of Brax et al. [9], who ask whether service modularization influences the customers' service experience. By showing that service modularization positively influences service flexibility which, in turn, leads to an increase in service value, we investigate one aspect of service experience in detail. Third, our results yield important insights for practitioners offering services in the B2B context as well. By showing the importance of service modularity to achieve service flexibility, our results encourage suppliers to thoroughly check the modularity of their existing services as well as explicitly consider service modularity when creating new services. As our results have shown, this accounts especially for services with a high degree of digitalization. Hence, service modularity could be the key for suppliers to stay competitive in highly competitive B2B markets which are characterized by heterogeneous and rapidly changing customer needs [e.g., 12, 13, 20].

The findings of this research have to be interpreted in light of their limitations, which may provide an avenue for future research. Different effects are connected to service modularity (e.g., cost reduction, mitigation of risks). As we only focused on the effect of service modularity on service flexibility, future research should investigate the mechanisms of other outcomes of service modularity by also considering the possibly moderating influence of service digitalization. Due to our research design, service modularization only considers the service modules of one firm. Future research could broaden this view by considering service platforms which comprise modules of multiple firms. We assume that this might even further strengthens the moderating role of service digitalization.

In conclusion, we have offered new insights into the moderating influence of service digitalization on the relationship between service modularity and service flexibility.

Appendix

See Tables 1, 2, and 3.

Table 1. Measurement Items with respective loadings for the main constructs.

Service Modularity (SM)		
Adapted from Vickery et al. [7]; reflective; 7-Point Likert scale with anchors 1 = “strongly disagree” and 7 = “strongly agree”		
SM1	The service is composed of service modules (or self-contained processing units)	0.797
SM2	The service is broken down into service modules that can operate independently	0.788
SM3	Service modules can be added to or removed from the service without changing other service modules	0.882
SM4	The service is designed so that service modules can be added or removed without significant changes to other service modules	0.902
SM5	The service is designed to be rapidly disassembled and reconfigured	0.755
Service Flexibility (SF)		
Adapted from Nelson et al. [14]; reflective; 7-Point Likert scale with anchors 1 = “strongly disagree” and 7 = “strongly agree”		
SF1	The service can be adapted to meet a variety of needs	0.835
SF2	The service can flexibly adjust to new demands or conditions	0.905
SF3	The service is versatile in addressing needs as they arise	0.862
Service Value (SV)		
Adapted from Stock and Zacharias [19]; reflective; 7-Point Likert scale with anchors 1 = “strongly disagree” and 7 = “strongly agree”		
SV1	The service offers unique advantages to our customers	0.760
SV2	The service offers higher quality than services of our competitors	0.803
SV3	The service offers higher value than services of our competitors	0.766
SV4	The service solves the problems of our customers	0.724
SV5	The service delivers high benefits for our customers	0.753
Service Digitalization (SD)		
Percentage scale between 0% and 100% with steps of 5%		
SD1	Please rate the percentage of the service provision which is done by IT-systems	1.000
Investment Cost (IC)		
Adapted from Benaroch et al. [49]; selection among predefined ranges in EUR with the boundaries 50,000, 0.1 million, 0.5 million, 1 million and 5 million as well as more than 5 million		
IC1	What is the amount in EUR approved for this service?	1.000
Firm Age (FA)		
Adapted from Demirkan et al. [50]		
FA1	What is your companies age in years?	1.000
Revenue (R)		
Selection among predefined ranges in EUR with the boundaries: 0.1 million, 1 million, 5 million, 10 million, 50 million, 100 million, 500 million, 1 billion and 1.5 billion as well as more than 1.5 billion		
R1	What is your company’s turnover in the past year?	1.000

Table 2. Indices for the assessment of internal consistency reliability.

Construct	Cr. α	CR	AVE
Service Modularity (SM)	0.886	0.915	0.684
Service Flexibility (SF)	0.835	0.901	0.753
Service Value (SV)	0.819	0.873	0.580
Service Digitalization (SD)	1.000	1.000	1.000
Investment Cost (IC)	1.000	1.000	1.000
Firm Age (FA)	1.000	1.000	1.000
Revenue (R)	1.000	1.000	1.000

Table 3. Correlations and Indices for the assessment of discriminant validity.

Construct	SM	SF	SV	SD	IC	FA	R
SM	0.827						
SF	0.252	0.868					
SV	0.267	0.340	0.761				
SD	0.244	-0.056	0.133	1.000			
IC	0.101	0.041	-0.012	0.077	1.000		
FA	-0.022	0.027	0.074	0.022	-0.028	1.000	
R	-0.057	-0.008	0.064	-0.011	0.463	0.067	1.000

References

1. Xue, L., Zhang, C., Ling, H., Zhao, X.: Risk mitigation in supply chain digitization: system modularity and information technology governance. *J. Manag. Inf. Syst.* **30**, 325–352 (2013)
2. Froehle, C.M., Roth, A.V.: New measurement scales for evaluating perceptions of the technology-mediated customer service experience. *J. Oper. Manag.* **22**, 1–21 (2004)
3. Böhmman, T., Junginger, M., Krcmar, H.: Modular service architectures: a concept and method for engineering it services. In: 36th Annual Hawaii International Conference on System Sciences, 10–19 (2003)
4. Nambisan, S., Lyytinen, K., Majchrzak, A., Song, M.: Digital innovation management: reinventing innovation management research in a digital world. *MIS Q.* **41**, 223–238 (2017)
5. Scherer, A., Wunderlich, N.V., von Wangenheim, F.: The value of self-service: long-term effects of technology-based self-service usage on customer retention. *MIS Q.* **39**, 177–200 (2015)
6. Baldwin, C.Y., Clark, K.B.: Managing in an age of modularity. *Harvard Bus. Rev.* **75**, 84–93 (1997)
7. Vickery, S.K., Koufteros, X., Dröge, C., Calantone, R.: Product modularity, process modularity, and new product introduction performance: does complexity matter? *Prod. Oper. Manag.* **25**, 751–770 (2016)
8. Voss, C.A., Hsuan, J.: Service architecture and modularity. *Decis. Sci.* **40**, 541–569 (2009)
9. Brax, S.A., Bask, A., Hsuan, J., Voss, C.: Service modularity and architecture – an overview and research agenda. *Int. J. Oper. Prod. Manag.* **37**, 686–702 (2017)

10. Dörbecker, R., Böhmman, T.: The concept and effects of service modularity – a literature review. In: 46th Annual Hawaii International Conference on System Sciences (HICSS-46), pp. 1357–1366 (2013)
11. Fixson, S.K.: Modularity and commonality research: past developments and future opportunities. *Concurr. Eng.* **15**, 85–111 (2007)
12. Rahikka, E., Ulkuniemi, P., Pekkarinen, S.: Developing the value perception of the business customer through service modularity. *J. Bus. Ind. Mark.* **26**, 357–367 (2011)
13. Martin, B., Stephan, K.: Providing a method for composing modular B2B services. *J. Bus. Ind. Mark.* **26**, 320–331 (2011)
14. Nelson, R.R., Todd, P.A., Wixom, B.H.: Antecedents of information and system quality: an empirical examination within the context of data warehousing. *J. Manag. Inf. Syst.* **21**, 199–235 (2005)
15. Moon, S.K., Shu, J., Simpson, T.W., Kumara, S.R.T.: A module-based service model for mass customization: service family design. *IIE Trans.* **43**, 153–163 (2010)
16. Lewis, M.O., Mathiassen, L., Rai, A.: Scalable growth in IT-enabled service provisioning: a sensemaking perspective. *Eur. J. Inf. Syst.* **20**, 285–302 (2011)
17. Yoo, Y.: The Tables have turned: how can the information systems field contribute to technology and innovation management research? *J. Assoc. Inf. Syst.* **14**, 227–236 (2013)
18. Bharadwaj, A., El Sawy, O.A., Pavlou, P.A., Venkatraman, N.: Digital business strategy: toward a next generation of insights. *MIS Q.* **37**, 471–482 (2013)
19. Stock, R.M., Zacharias, N.A.: Patterns and performance outcomes of innovation orientation. *J. Acad. Mark. Sci.* **39**, 870–888 (2011)
20. Chun-Hsien, L., Chu-Ching, W.: Formulating service business strategies with integrative services model from customer and provider perspectives. *Eur. J. Mark.* **44**, 1500–1527 (2010)
21. Iman, N.: Modularity matters: a critical review and synthesis of service modularity. *Int. J. Qual. Serv. Sci.* **8**, 38–52 (2016)
22. Tuunanen, T., Cassab, H.: Service process modularization: reuse versus variation in service extensions. *J. Serv. Res.* **14**, 340–354 (2011)
23. Sundbo, J.: The service economy: standardisation or customisation? *Serv. Ind. J.* **22**, 93–116 (2002)
24. Salvador, F.: Toward a product system modularity construct: literature review and reconceptualization. *IEEE Trans. Eng. Manag.* **54**, 219–240 (2007)
25. Yoo, Y., Henfridsson, O., Lyytinen, K.: Research commentary—the new organizing logic of digital innovation: an agenda for information systems research. *Inf. Syst. Res.* **21**, 724–735 (2010)
26. Tuunanen, T., Bask, A., Merisalo-Rantanen, H.: Typology for modular service design: review of literature. *Int. J. Serv. Sci. Manag. Eng. Technol.* **3**, 99–112 (2012)
27. Bask, A., Merisalo-Rantanen, H., Tuunanen, T.: Developing a modular service architecture for E-store supply chains: the small- and medium-sized enterprise perspective. *Serv. Sci.* **6**, 251–273 (2014)
28. Sambamurthy, V., Bharadwaj, A., Grover, V.: Shaping agility through digital options: reconceptualizing the role of information technology in contemporary firms. *MIS Q.* **27**, 237–263 (2003)
29. Henfridsson, O., Mathiassen, L., Svahn, F.: Managing technological change in the digital age: the role of architectural frames. *J. Inf. Technol.* **29**, 27–43 (2014)
30. Chan, K.W., Yim, C.K., Lam, S.S.K.: Is customer participation in value creation a double-edged sword? Evidence from professional financial services across cultures. *J. Mark.* **74**, 48–64 (2010)

31. Tiwana, A., Konsynski, B.: Complementarities between organizational IT architecture and governance structure. *Inf. Syst. Res.* **21**, 288–304 (2009)
32. Kumar, N., Stern, L.W., Anderson, J.C.: Conducting interorganizational research using key informants. *Acad. Manag. J.* **36**, 1633–1651 (1993)
33. Bergkvist, L.I., Rossiter, J.R.: The predictive validity of multiple-item versus single-item measures of the same constructs. *J. Mark. Res.* **44**, 175–184 (2007)
34. Rossiter, J.R.: The C-Oar-Se procedure for scale development in marketing. *Int. J. Res. Mark.* **19**, 305–335 (2002)
35. Hair, J.F., Ringle, C.M., Sarstedt, M.: PLS-Sem: indeed a silver bullet. *J. Mark. Theory Pract.* **19**, 139–152 (2011)
36. Hair, J.F., Hult, G.T.M., Ringle, C., Sarstedt, M.: *A Primer on Partial Least Squares Structural Equation Modeling (PLS-Sem)*. Sage Publications, Los Angeles (2017)
37. Podsakoff, P.M., MacKenzie, S.B., Lee, J.-Y., Podsakoff, N.P.: Common method biases in behavioral research: a critical review of the literature and recommended remedies. *J. Appl. Psychol.* **88**, 879–903 (2003)
38. Bagozzi, R.P., Yi, Y., Phillips, L.W.: Assessing construct validity in organizational research. *Adm. Sci. Q.* **36**, 421–458 (1991)
39. Bagozzi, R.P., Yi, Y.: Specification, evaluation, and interpretation of structural equation models. *J. Acad. Mark. Sci.* **40**, 8–34 (2012)
40. Fornell, C., Larcker, D.F.: Evaluating structural equation models with unobservable variables and measurement error. *J. Mark. Res.* **18**, 39–50 (1981)
41. Henseler, J., Ringle, C.M., Sarstedt, M.: A new criterion for assessing discriminant validity in variance-based structural equation modeling. *J. Acad. Mark. Sci.* **43**, 115–135 (2015)
42. Lindell, M.K., Whitney, D.J.: Accounting for common method variance in cross-sectional research designs. *J. Appl. Psychol.* **86**, 114–121 (2001)
43. Bennett Thatcher, J., Perrewé, P.L.: An empirical examination of individual traits as antecedents to computer anxiety and computer self-efficacy. *MIS Q.* **26**, 381–396 (2002)
44. Henseler, J., Chin, W.W.: A comparison of approaches for the analysis of interaction effects between latent variables using partial least squares path modeling. *Struct. Equ. Model.: Multidiscip. J.* **17**, 82–109 (2010)
45. Sharma, S., Durand, R.M., Gur-Arie, O.: Identification and analysis of moderator variables. *J. Mark. Res.* **18**, 291–300 (1981)
46. Henseler, J., Fassott, G.: Testing moderating effects in PLS path models: an illustration of available procedures. In: Esposito, Vinzi V., Chin, W., Henseler, J., Wang, H. (eds.) *Handbook of Partial Least Squares*, pp. 713–735. Springer, Heidelberg (2010). https://doi.org/10.1007/978-3-540-32827-8_31
47. Kenny, D.A.: <http://davidakenny.net/cm/moderation.htm>. Accessed 02 Nov 2017
48. Zhao, X., Lynch, J.G., Chen, Q.: Reconsidering Baron and Kenny: myths and truths about mediation analysis. *J. Consum. Res.* **37**, 197–206 (2010)
49. Benaroch, M., Lichtenstein, Y., Robinson, K.: Real options in information technology risk management: an empirical validation of risk-option relationships. *MIS Q.* **30**, 827–864 (2006)
50. Demirkan, I., Deeds, D.L., Demirkan, S.: Exploring the role of network characteristics, knowledge quality, and inertia on the evolution of scientific networks. *J. Manag.* **39**, 1462–1489 (2013)

Leveraging the Value of Cocreation during Service Provisions through Digitalization – An Empirical Investigation in the B2B Context

Author: Torben Stoffer, University of Passau, Germany

Submitted to: 40th International Conference on Information Systems (VHB-JQ3 rating: A).
Currently under review.

Abstract

According to service-dominant logic, service value is generated by the integration of customer resources, also referred to as cocreation. Cocreation is especially apparent in business-to-business relationships and yields, in addition to greater service value, advantages for both customers and suppliers (e.g., sustainable business relationships). Literature has found a positive effect of cocreation on service value both for digital and non-digital services. Hence, the goal of this study is to investigate the contingency effect of service digitalization on the relationship between cocreation and service value. We propose and provide empirical evidence that service digitalization positively moderates the effect of cocreation on service value. By doing this, we draw on service-dominant logic as the theoretical lens. Our research is based on survey-data of 156 customer companies and is analyzed using the partial least square method. The results yield various theoretical and practical implications.

Leveraging the Value of Cocreation during Service Provisions through Digitalization – An Empirical Investigation in the B2B Context

Completed Research Paper

Torben Stoffer

University of Passau
Innstraße 41, 94032 Passau, Germany
torben.stoffer@uni-passau.de

Abstract

According to service-dominant logic, service value is generated by the integration of customer resources, also referred to as cocreation. Cocreation is especially apparent in business-to-business relationships and yields, in addition to greater service value, advantages for both customers and suppliers (e.g., sustainable business relationships). Literature has found a positive effect of cocreation on service value both for digital and non-digital services. Hence, the goal of this study is to investigate the contingency effect of service digitalization on the relationship between cocreation and service value. We propose and provide empirical evidence that service digitalization positively moderates the effect of cocreation on service value. By doing this, we draw on service-dominant logic as the theoretical lens. Our research is based on survey-data of 156 customer companies and is analyzed using the partial least square method. The results yield various theoretical and practical implications.

Keywords: Service Digitalization, Cocreation, Service-Dominant Logic, B2B, PLS

Introduction

In the last decade, an increasing number of digital business-to-business (B2B) services have been brought to market. One example for new digital services are the *McKinsey Solutions* (McKinsey 2019). The McKinsey Solutions comprise a number of completely digital services (e.g., benchmarking of a company's cybersecurity maturity and creation of a strategy for improvement) that have former been performed by consultants (i.e., as a non-digital service).

It is known that the participation of customers during the provision of services, often referred to as cocreation (Vargo and Lusch 2008; Vargo and Lusch 2016), is especially apparent in the B2B context (Bolton and Saxena-Iyer 2009). For example, customers have to give input during the benchmarking of their company's cybersecurity maturity and they have to put the derived strategy into practice during the implementation phase. Extant literature has shown in a variety of contexts that cocreation is, among others, accompanied by the advantage of a greater customer service value (Chan et al. 2010; Dong et al. 2008; Ostrom et al. 2010). For example, DHL, one of the global market leaders in logistics, has built special innovation centers based in Germany and Singapore. By bringing customers and their DHL service partners together in these innovation centers, DHL ensures that its services create value for both parties (Crandell 2016). Chan et al. (2010) even characterize cocreation as the next frontier in competitive effectiveness. Nevertheless, literature is lacking an explicit consideration of whether cocreation leads to a larger increase in service value during the provision of digital or non-digital services in the B2B context

(Dong and Sivakumar 2017; Lusch and Nambisan 2015; Ostrom et al. 2015; Scherer et al. 2015). Thus, our central research question is:

Research question: Does service digitalization moderate the effect of cocreation by the customer (i.e., the beneficiary) on service value in the B2B context?

As value, cocreation, and the kind of used resources (i.e., digital and/or non-digital resources) are focal parts of the service-dominant (S-D) logic (Vargo and Lusch 2008; Vargo and Lusch 2016), we draw on S-D logic as the theoretical lens for our study. S-D logic states that, first, value is always uniquely and phenomenologically determined by the beneficiary (i.e., the customer). Second, value is cocreated by multiple actors (i.e., customer and supplier), always including the beneficiary, and, third, all actors are resource integrators (Vargo and Lusch 2008). To follow this emphasis of the customers' role, we empirically investigate the perspective of customers in B2B relationships on our research model. In line with S-D logic, we name the customer *beneficiary* and the supplier *actor* in the following. Furthermore, we define *service value* as the services' quality and benefits by considering its sacrifices (e.g., monetary cost, time, and effort) as perceived by the beneficiaries (Aarikka-Stenroos and Jaakkola 2012; Stock and Zacharias 2011) and *cocreation* as the extent of the beneficiaries' integration into service provisions.

Following Böhmman et al. (2003), we define *service digitalization* as the degree to which the service is provided by IT instead of people. Surprisingly, extant literature has mostly considered either services with a low or high degree of digitalization (e.g., Baird and Raghu 2015; Nambisan et al. 2017; Scherer et al. 2015). In contrast to these studies, we consider service digitalization as a continuum which can range from non-digital to completely digital services as, for example, proposed by Froehle and Roth (2004). Based on this conceptualization, our study is not limited to non-digital or digital services but includes also services with intermediate degrees of digitalization (e.g., a project management service, which consists of a consultant's work and a complementary software which is operated by the actor and used by the beneficiary). Hence, our study aims to investigate the phenomenon of service digitalization and its consequences in more detail.

We contribute to research in multiple ways. First, we investigate the moderating influence of service digitalization on the relationship between cocreation and service value. By doing this, we contribute to technology and innovation management research (Iman 2016; Nambisan et al. 2017; Sambamurthy et al. 2003; Yoo 2013) and provide insights based on the conceptual thoughts of Yoo (2013) and Sambamurthy et al. (2003). In addition, we answer the calls of Lusch and Nambisan (2015) as well as Ostrom et al. (2015) who request to investigate how cocreation can be facilitated by digital infrastructure and to consider technology (i.e., service digitalization) to advance services. Furthermore, by considering service digitalization as a continuum, we provide more nuanced results than prior work. Second, our research adds empirical evidence to investigations on digital and non-digital services which are vital factors for suppliers' effective positioning and competition (Rai and Tang 2014). Third, our research is embedded in S-D logic by addressing its core principles. Hence, we strengthen S-D logic by our evidence-based research as proposed by Vargo and Lusch (2017).

Our study also yields recommendations for practitioners. Suppliers of services are encouraged to actively integrate their business customers into their service provisions. This increases their customers' perceived service value and results in sustainable business relationships (Lacoste 2016). As this especially applies to digital services, suppliers should design their digital services in a way that customers can efficiently participate in the service provisions.

The remainder of this paper is structured as follows: The next section introduces the theoretical background covering value creation in the context of S-D logic and our conceptualization of service digitalization. Then, the research model including the hypotheses is developed. The fourth section describes the survey-based sample, comprising 156 companies receiving services in B2B relationships, and the constructs' conceptualization. Afterwards, the constructs' measurement is validated and the research model including the hypotheses is assessed. The paper concludes with the discussion, limitations, and recommendations for future research.

Theoretical Background

The conceptual background of this paper is divided into two sub-sections. First, we discuss the cocreation of value in S-D logic and, second, we introduce the concept of service digitalization.

Cocreated Value as a Core Principle of S-D Logic

Over the last years, S-D logic, which explicitly focuses on services, has emerged and gained momentum (Lusch and Nambisan 2015; Vargo and Lusch 2004a; Vargo and Lusch 2004b; Vargo and Lusch 2016; Vargo and Lusch 2017). Furthermore, it has also been incorporated by IS literature (e.g., Peters et al. 2015; Scherer et al. 2015; Srivastava and Shainesh 2015).

Service value reflects the perceived benefits compared to the sacrifices for beneficiaries (e.g., monetary cost, time, and effort) (Aarikka-Stenroos and Jaakkola 2012; Stock and Zacharias 2011). As a focal concept, S-D logic states that value is cocreated by multiple actors, always including the beneficiary (i.e., the customer). In addition, S-D logic emphasizes that value is always uniquely and phenomenologically determined by the beneficiary (Vargo and Lusch 2016). In line with these core principles, this study investigates the value arising from cocreation during service provisions as determined by beneficiaries.

Beneficiaries can create value through cocreation by achieving better service quality, more customized services, and increased control. In general, cocreation reduces the beneficiaries' risks to receive inappropriate outcomes (Chan et al. 2010; Dong et al. 2008; Paluch and Blut 2013). In addition, for actors (i.e., suppliers), cocreation can lead to a competitive advantage (Karpen et al. 2015), improvements of existing services or the development of innovative new services (e.g., Nambisan 2002; Nambisan and Baron 2009; Sawhney et al. 2005), and sustainable business relationships (Lacoste 2016).

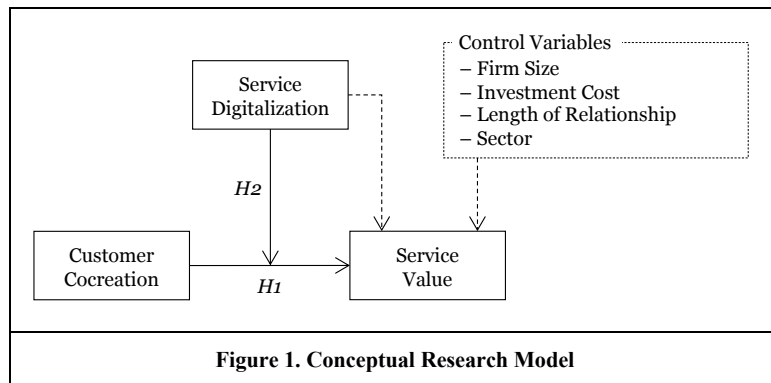
The importance of cocreation has been identified in particular for services in which the market offering is created during the service provision (Bitner et al. 2000) and for services that feature high credence qualities as well as high interdependence between beneficiaries and actors (Chan et al. 2010). Both conditions also apply to the B2B context of our study.

Service Digitalization as a Continuum

Extant literature has often treated service digitalization as a binary concept (e.g., Baird and Raghu 2015; Nambisan et al. 2017; Scherer et al. 2015). In contrast, we define *service digitalization* as the degree to which the service is provided by IT instead of people. Hence, our conceptualization treats service digitalization as a continuum.

By doing this, we follow the conceptualizations of Froehle and Roth (2004) and Böhmman et al. (2003). Froehle and Roth (2004) classify services based on the role of technology used during the service provision and Böhmman et al. (2003) state that personnel and/or IT resources are used during service provisions. In addition, our approach is in line with S-D logic which considers, among others, technology (i.e., IT) and people as resources which can be integrated into service provisions (Maglio and Spohrer 2008).

Hence, the degree of service digitalization can range from *low*, where the service is mainly provided by people (e.g., a consulting service, where the service provision consists of the consultants' work in the first place), to *high*, where the service is mainly provided by IT (e.g., software as a service, which is offered as a self-service) in our study. Additionally, as our conceptualization of service digitalization is a continuum, it can take all intermediate degrees between purely digital or non-digital services (e.g., project management service consisting of a consultant's work and a complementary software which is operated by the actor and used by the beneficiary).



Research Model and Hypotheses Development

The research model contains two hypotheses, which are explained in the following and illustrated in Figure 1. Extant literature has shown that beneficiaries transfer their positive self-perception to services or products when they are involved in the design process (Atakan et al. 2014; Troye and Supphellen 2012). We propose that a similar spillover effect from cocreation to service value occurs during the provision of services. In addition, we know that cocreation leads to better service quality, customized services, and increased control. These benefits can be achieved by monitoring and understanding the actors' activities, providing direct input into the service provisions, and making more choices which reduce the risks to receive inappropriate outcomes (Chan et al. 2010; Dong et al. 2008; Paluch and Blut 2013). For example, during the creation of a strategy for improving a company's cybersecurity, constant involvement of the beneficiary (i.e., high level of cocreation) increases the beneficiary's control over the newly developed strategy which reduces the risk to receive a cybersecurity strategy which does not fit the beneficiary's expectations. This leads to our first hypothesis:

Hypothesis 1 (H1): Cocreation is positively associated with perceived service value.

Literature has found a positive effect of cocreation on service value both for services with a low and high degree of digitalization (Scherer et al. 2015), but neglects the possibly moderating role of service digitalization on that effect. By extending these results, we posit a positive moderating effect of service digitalization on the relationship between cocreation and service value. Literature has shown that value is cocreated during service provisions when actors and beneficiaries are able to interact by exchanging resources and get timely access to information (Breidbach and Maglio 2016). Digital services enable actors and beneficiaries to exchange resources independently of time and location as well as with faster speed (Dong et al. 2008; Lewis et al. 2011). For example, during the benchmarking of a company's cybersecurity maturity provided as a digital service, the beneficiary can enter information to the system at any time and from any location to get immediate recommendations on how this new information affects its optimal cybersecurity strategy. Therefore, we propose that digital services support both actors and beneficiaries to exchange information and, hence, increase the effect of cocreation on service value.

In addition, conceptual literature emphasizes that during the provision of digital services, cocreation is more effective due to reduced coordination costs which lead to an increase in service value of digital in comparison to non-digital services (Yoo 2013). Furthermore, during the provision of digital services, cocreation especially increases the actors' innovativeness, which leads to a higher service value for the customer as well (Sambamurthy et al. 2003). This argumentation is also in line with S-D logic, which emphasizes the opportunities of digital resources integrated into service provisions (Lusch and Nambisan 2015). Therefore, we hypothesize:

Hypothesis 2 (H2): An increase in service digitalization positively moderates the effect of cocreation on service value (cf., H1).

In addition, we consider the effects of variables which reflect service characteristics (i.e., investment cost) and company (i.e., firm size) as well as business relationship characteristics (i.e., length of relationship).

By including these additional variables, we control for alternative explanations of changes in service value. As the participating companies in our study belong to different sectors, we also include controls for the different sectors.

Methodology

A survey among 156 representatives of companies receiving services was conducted in September and October 2017. To ensure that the participants are knowledgeable about the characteristics of the service as well as about general company characteristics used as control variables, we addressed the managers who are involved in their company's buying processes. By doing this, we relied on the key information approach (Kumar et al. 1993).

Sample

At the beginning of the survey, all participants self-reported their level of knowledge about their respective company's processes and received services on a 7-point scale ranging from *very bad* to *very good*. To ensure the validity of the answers, only representatives who gave ratings of four or higher were included in the survey. We acquired the participants in cooperation with a market research firm.

156 representatives of companies receiving services completed our survey. Among these participants, 37% were working in the IT department, 24% were general managers, 13% were working in the buying department, 11% were working in the specialist field, 9% were marketing managers, and 6% were working in another department. In average, the representatives were working in their respective position for 7.3 years. The companies were located in the sectors industrials (31%), consulting (31%), logistics (15%), IT (13%), and others (10%). The companies had at least 50 and on average 2,800 employees.

Construct Conceptualization

At the beginning of the survey, all participants were asked to choose a service they had received an offer for from a supplier during the last six months. Then they had to describe that service in detail and were instructed to answer all questions with regard to that service (i.e., service digitalization) or business relationship (i.e., length of relationship), respectively.

Standard scale development procedures were applied for the measurement items. This included the conduction of a comprehensive literature review to use established measurement items and a pretest of all items with twelve researchers and practitioners, which in combination ensured clarity of the items' formulation. For all constructs except service digitalization existing measurement items were used which were modified or further developed when necessary (cf., Table 2 in the Appendix) to match the study's context. As there is no existing measure for service digitalization (i.e., the degree of service provision which is done by IT), in the literature, a new scale was developed to measure this construct. The measurement of the construct was inspired by literature (Böhmman et al. 2003; Froehle and Roth 2004) and discussed as well as validated in interviews with the twelve practitioners and researchers involved in the topic. After completion of the interviews, the final items' formulation was to everybody's satisfaction. All constructs are measured reflectively.

Results

To analyze our data, we use the variance-based partial least squares (PLS) method, which is a second-generation structural equation modelling technique (Hair et al. 2011; Wold 1966). PLS is chosen as it is especially suited for exploratory research (Hair et al. 2011), which applies to our investigation of the moderating influence of service digitalization on the relationship between cocreation and service value. Additionally, this approach allows us to assess the measurement model and to test the hypothesized structural model simultaneously (Bagozzi and Yi 1989; Gefen et al. 2000) enabling a comprehensive analysis of the research model (Fronell 1982). With our sample size and the number of relationships in our research model (cf., Figure 1), we achieve a power of 80% for our statistical analysis (Hair et al. 2017).

Table 1. Indices for the Assessment of Internal Consistency Reliability			
<i>Construct</i>	<i>Cr. α</i>	<i>CR</i>	<i>AVE</i>
Cocreation	.920	.943	.805
Service Value	.875	.901	.567
Service Digitalization	1.000	1.000	1.000
Firm Size	1.000	1.000	1.000
Investment Cost	1.000	1.000	1.000
Length of Relationship	1.000	1.000	1.000
Sector <i>Industrials</i> (S_{in})	1.000	1.000	1.000
Sector <i>Consulting</i> (S_c)	1.000	1.000	1.000
Sector <i>Logistics</i> (S_L)	1.000	1.000	1.000
Sector <i>IT</i> (S_{IT})	1.000	1.000	1.000

Table 1. Indices for the Assessment of Internal Consistency Reliability

Measurement Model Assessment

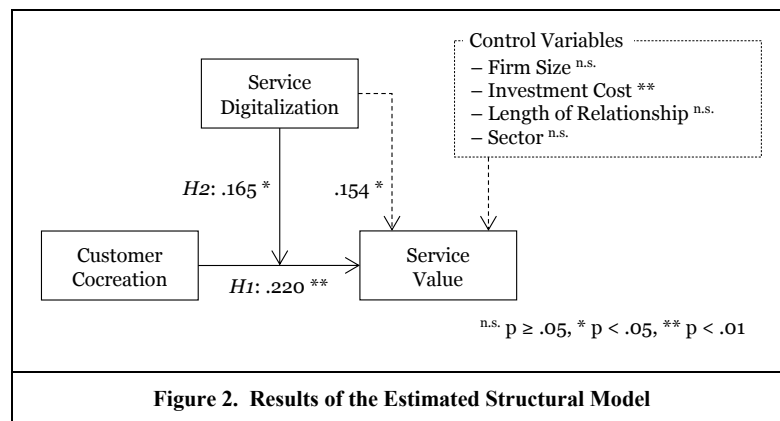
The psychometric property assessment includes testing of convergent validity, discriminant validity, and internal consistency reliability (Hair et al. 2017). Additionally, we test for potential common method biases (Podsakoff et al. 2003).

To ensure convergent validity, the item loadings and the average variance extracted (AVE) are assessed. All outer loadings of the items on their respective construct exceed the threshold of .7 (cf., Table 3 in the Appendix) except the sixth item of service value (cf., SV6) (Bagozzi et al. 1991; Hair et al. 2011). The outer loading is slightly below (.664) the recommend threshold but still above the lower threshold of .4. As the measurement items are adapted from extant literature, the item should be kept to preserve the content validity of the construct (Bagozzi et al. 1991; Hair et al. 2011). On the construct level, the AVEs are considered to ensure convergent validity. The AVE values for all constructs of the measurement model (cf., Table 1) exceed the recommended threshold of .5 (Hair et al. 2011).

To assess discriminant validity, we test whether the items' loadings are greater than their cross-loading on the other constructs (Bagozzi and Yi 2012), the Fornell-Larcker criterion is met (Fornell and Larcker 1981), and the constructs' heterotrait-monotrait ratios (HTMT) do not exceed the given threshold of .9 (Henseler et al. 2015). The first criterion, which investigates the item level, is given as all items load highest on their respective construct (cf., Table 3 in the Appendix). As shown in Table 4 in the Appendix, the Fornell-Larcker criterion is fulfilled for all constructs. Additionally, all constructs' HTMT values (cf., Table 5 in the Appendix) meet the threshold of .9 with the highest value of .451 in the data (Henseler et al. 2015). In summary, discriminant validity can be assumed for the measurement model.

Internal consistency reliability comprises the assessment of Cronbach's α and composite reliability (CR). The values of Cronbach's α and CR (cf., Table 1) meet the lower threshold of .7 (Bagozzi and Yi 2012) and, hence, internal consistency reliability is also met.

Lastly, we include a marker variable in the survey to test for a potential common method bias (Podsakoff et al. 2003). The result of the correlation analysis does not indicate any significant correlations between the marker variable and the other variables in the measurement model and, hence, the test does not show any indication for the existence of common method bias in the survey (Lindell and Whitney 2001).



Structural Model Assessment

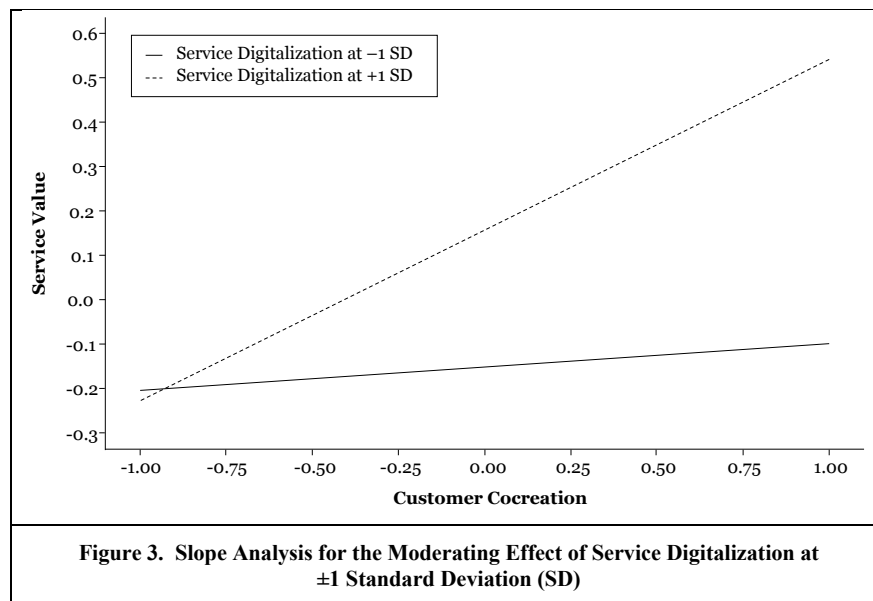
After ensuring the validity of the measurement model, first, the estimated structural model (cf., Figure 2) is analyzed and, second, the hypothesized relationships are assessed. To address potential collinearity issues between the exogenous latent variables, the Variance Inflation Factors (VIF) are examined. All VIF values (cf., Table 6 in the Appendix) are well below the threshold of 5 (Bennett Thatcher and Perrewé 2002; Hair et al. 2011), with the highest VIF value of 2.910. Hence, collinearity seems not to be an issue in the structural model.

This research model aims at explaining service value. Hence, predictive validity is assessed by the amount of explained variance (R^2) and Stone-Geisser's Q^2 value (Geisser 1975; Stone 1974). The research model explains 24.4% of the variance in service value, with a bias corrected 95% confidence interval between 12.8% and 30.4%. We can show predictive value as the Stone-Geisser's Q^2 value is larger than 0 (Q^2 value of .111) (Chin 2010).

To assess the significances of the path coefficients, a bootstrap procedure with 5,000 samples and individual sign changes is performed. The impact of all control variables except investment cost (effect size of .279) is not significant. In addition to testing the main model as described below, we perform a supplemental analysis which considers a direct effect between service digitalization and cocreation. All results show to be robust towards this additional constraint.

The effect of cocreation on service value equals .220 and is significant (p-value of .007 and the bias corrected 95% confidence interval between .053 and .373). Hence, the data confirms the positive impact from cocreation on service value which supports H1.

Our research question aims at investigating the significance of the moderating effect of service digitalization on the positive relationship between cocreation and service value. By following the suggestions of Henseler and Chin (2010), the moderation is modelled via the two-stage approach. To test the moderation (i.e., H2), we follow Hair et al. (2017) and Sharma et al. (1981). The positive moderating effect of service digitalization is significant (p-value of .015 and the bias corrected 95% confidence interval between .037 and .304). The f^2 value equals .037 and, hence, we can confirm a large moderating effect (Hair et al. 2017; Henseler and Fassott 2010; Kenny 2015). The direct effect between service digitalization and service value is also significant (p-value of .042 and the bias corrected 95% confidence interval between .012 and .300). Thus, we can confirm a “quasi moderator” (Sharma et al. 1981). Figure 3 illustrates the moderation effect by means of analyzing the slopes following Edwards and Lambert (2007). The plot shows the influence of cocreation on service value for services with a high and low degree of service digitalization (± 1 standard deviation). As shown in the plot, the effect is larger for services with a high degree of service digitalization (slope of .385) than for service with a low degree of service digitalization (slope of .055) which supports H2 as well.



Discussion, Limitations, and Future Research

Drawing on the empirical analysis of 156 participating companies, we have shown that cocreation has a positive effect on service value and that service digitalization positively moderates this relationship. Our study contributes to theory in three ways:

First, we showed that service digitalization moderates the relationship between cocreation and service value. With this result, we underpin the conceptual thoughts of Yoo (2013) and Sambamurthy et al. (2003). In addition, we follow the calls by Lusch and Nambisan (2015) and Ostrom et al. (2015) to empirically investigate the interplay between service digitalization and cocreation as well as services. Furthermore, by considering service digitalization as a continuum and, hence, by providing more nuanced results, we extend extant literature that treats service digitalization as a binary concept (e.g., Baird and Raghuram 2015; Nambisan et al. 2017; Scherer et al. 2015).

Second, by addressing customers in B2B relationships, we provide empirical support for the customers' view on value generation and the moderating impact of service digitalization. By doing this, we add empirical evidence to investigations on digital and non-digital services which are a vital factor for suppliers' effective positioning and competition as, for example, requested by Rai and Tang (2014).

Third, our research model is embedded in S-D logic by targeting its core factors cocreation and value determination by the beneficiary (i.e., customer) as well as the positive effect of cocreation on service value. Hence, as proposed by Vargo and Lusch (2017), we strengthen S-D logic with our evidence-based results.

Our results also yield important insights for practitioners offering services in the B2B context which are puzzled about the consequences of digitalization. We encourage suppliers to actively integrate their customers into the service provision to benefit from the increase in value as perceived by their customers, especially during the provision of digital services. As a result, suppliers can benefit from a competitive advantage (Karpen et al. 2015), improvements of existing services or the development of innovative new services (e.g., Nambisan 2002; Nambisan and Baron 2009; Sawhney et al. 2005), and sustainable business relationships (Lacoste 2016).

The findings of this research have to be interpreted in light of their limitations, which may provide an avenue for future research. Our study focuses on the moderating influence of service digitalization on the

relationship between cocreation and service value during an early phase of the service provision. As this effect might evolve over time, investigating the moderating effect over a longer period could extend or strengthen our results. In line with the core principles of S-D logic, we only focus on the effect of cocreation on service value. Future research could also consider additional effects of cocreation, which could be expected to be either positive (e.g., customization) or negative (e.g., effort), and the moderating influence of service digitalization on these effects. Furthermore, we consider the customers' view on our research model. Extant literature has indicated that the suppliers' view might differ (e.g., an increase in job stress for suppliers' employees as a consequence of cocreation (Chan et al. 2010)). Hence, future research could additionally incorporate the suppliers' view on the effects of cocreation.

In sum, we empirically investigated the moderating effect of service digitalization on the relationship between cocreation and service value in the B2B context. By doing this, we enhance technology and innovation management as well as S-D logic.

Appendix

Table 2. Measurement Items for all Constructs	
<i>Cocreation (C)</i>	
Adapted from Homburg and Stock (2004)	
7-Point Likert scale with anchors 1 = “strongly disagree” and 7 = “strongly agree”	
C1	It is customary that customers are involved in the service provision.
C2	It is customary that customers continuously integrate their own resources into the service provision.
C3	It is customary that customers invest themselves into the service provision.
C4	It is customary that customers invest their companies’ resources into the service provision.
<i>Service Value (SV)</i>	
Adapted from Stock and Zacharias (2011)	
7-Point Likert scale with anchors 1 = “strongly disagree” and 7 = “strongly agree”	
SV1	The service offers unique advantages to our company.
SV2	The service offers higher quality than services of other suppliers.
SV3	The service offers higher value than services of other suppliers.
SV4	The service solves our problems.
SV5	The service leads to significant cost savings for our company.
SV6	The service is supportive of our companies’ efforts to simplify the processes.
SV7	The service delivers high benefits for our company.
<i>Service Digitalization (SD)</i>	
Percentage scale between 0% and 100% with steps of 5%	
SD1	Please rate the percentage of the service provision which is done by IT-systems.
<i>Firm Size (FS)</i>	
Percentage scale between 0% and 100% with steps of 5%	
FS1	What is the number of full-time employees currently working in your company?
<i>Investment Cost (IC)</i>	
Adapted from Benaroch et al. (2006)	
IC1	The Euro amount approved for this project.
<i>Length of Relationship (LR)</i>	
Adapted from Homburg et al. (2009)	
LR1	How many years does this business relationship exist?
<i>Sector (S)</i>	
Open question	
S1	To which sector does your company belong?

Table 2. Measurement Items for all Constructs

<i>Item</i>	<i>C</i>	<i>SV</i>	<i>SD</i>	<i>FS</i>	<i>IC</i>	<i>LR</i>
C1	0.918	0.256	0.067	-0.084	0.214	-0.171
C2	0.894	0.244	0.078	-0.183	0.114	-0.181
C3	0.879	0.244	-0.030	-0.133	0.152	-0.087
C4	0.898	0.214	0.091	-0.155	0.062	-0.156
SV1	0.267	0.814	0.096	-0.064	0.260	-0.185
SV2	0.183	0.781	0.168	0.087	0.332	-0.031
SV3	0.238	0.803	0.134	-0.006	0.277	-0.038
SV4	0.234	0.715	0.085	-0.113	0.235	-0.094
SV5	0.197	0.704	0.222	-0.003	0.233	-0.092
SV6	0.133	0.664	0.101	-0.026	0.076	-0.020
SV7	0.104	0.788	0.108	0.007	0.166	0.001
SD1	0.056	0.178	1.000	-0.118	-0.012	-0.005
FS1	-0.153	-0.021	-0.118	1.000	0.148	0.189
IC1	0.154	0.318	-0.012	0.148	1.000	0.040
LR1	-0.166	-0.097	-0.005	0.189	0.040	1.000

Table 3. Loadings and Cross Loadings of the Items

<i>Construct</i>	<i>C</i>	<i>SV</i>	<i>SD</i>	<i>FS</i>	<i>IC</i>	<i>LR</i>	<i>S_{in}</i>	<i>S_c</i>	<i>S_L</i>	<i>S_{IT}</i>
Cocreation (C)	.898									
Service Value (SV)	.268	.754								
Service Digitalization (SD)	.056	.178	1.000							
Firm Size (FS)	-.153	-.021	-.118	1.000						
Investment Cost (IC)	.154	.318	-.012	.148	1.000					
Length of Relationship (LR)	-.166	-.097	-.005	.189	.040	1.000				
Sector <i>Industrials</i> (S _{in})	.002	.141	.030	.013	.090	.119	1.000			
Sector <i>Consulting</i> (S _c)	.047	-.125	-.097	-.032	.061	.024	-.451	1.000		
Sector <i>Logistics</i> (S _L)	.010	.040	.012	.069	-.095	-.134	-.281	-.277	1.000	
Sector <i>IT</i> (S _{IT})	-.111	.037	.103	-.081	.016	-.033	-.260	-.256	-.159	1.000

Table 4. Correlations between Constructs and Square Root of the AVEs on the Diagonal

Construct	C	SV	SD	FS	IC	LR	S _m	S _c	S _L	S _{IT}
Cocreation (C)										
Service Value (SV)	.285									
Service Digitalization (SD)	.077	.185								
Firm Size (FS)	.161	.062	.118							
Investment Cost (IC)	.157	.319	.012	.148						
Length of Relationship (LR)	.173	.093	.005	.189	.040					
Sector <i>Industrials</i> (S _m)	.033	.156	.030	.013	.090	.119				
Sector <i>Consulting</i> (S _c)	.051	.132	.097	.032	.061	.024	.451			
Sector <i>Logistics</i> (S _L)	.024	.061	.012	.069	.095	.134	.281	.277		
Sector <i>IT</i> (S _{IT})	.116	.116	.103	.081	.016	.033	.260	.256	.159	

Table 5. Heterotrait-Monotrait Ratio (HTMT) of the Constructs

Construct	VIF Value
Cocreation (C)	1.110
Service Digitalization (SD)	1.035
Firm Size (FS)	1.133
Investment Cost (IC)	1.105
Length of Relationship (LR)	1.094
Sector <i>Industrials</i> (S _m)	2.910
Sector <i>Consulting</i> (S _c)	2.854
Sector <i>Logistics</i> (S _L)	2.120
Sector <i>IT</i> (S _{IT})	2.066

Table 6. Inner VIF Values of the Constructs

References

- Aarikka-Stenroos, L., and Jaakkola, E. 2012. "Value Co-Creation in Knowledge Intensive Business Services: A Dyadic Perspective on the Joint Problem Solving Process," *Industrial Marketing Management* (41:1), pp. 15-26.
- Atakan, S. S., Bagozzi, R. P., and Yoon, C. 2014. "Consumer Participation in the Design and Realization Stages of Production: How Self-Production Shapes Consumer Evaluations and Relationships to Products," *International Journal of Research in Marketing* (31:4), pp. 395-408.
- Bagozzi, R. P., and Yi, Y. 1989. "On the Use of Structural Equation Models in Experimental Designs," *Journal of Marketing Research* (26:3), pp. 271-284.
- Bagozzi, R. P., and Yi, Y. 2012. "Specification, Evaluation, and Interpretation of Structural Equation Models," *Journal of the Academy of Marketing Science* (40:1), pp. 8-34.
- Bagozzi, R. P., Yi, Y., and Phillips, L. W. 1991. "Assessing Construct Validity in Organizational Research," *Administrative Science Quarterly* (36:3), pp. 421-458.

- Baird, A., and Raghu, T. S. 2015. "Associating Consumer Perceived Value with Business Models for Digital Services," *European Journal of Information Systems* (24:1), pp. 4-22.
- Benaroch, M., Lichtenstein, Y., and Robinson, K. 2006. "Real Options in Information Technology Risk Management: An Empirical Validation of Risk-Option Relationships," *MIS Quarterly* (30:4), pp. 827-864.
- Bennett Thatcher, J., and Perrewé, P. L. 2002. "An Empirical Examination of Individual Traits as Antecedents to Computer Anxiety and Computer Self-Efficacy," *MIS Quarterly* (26:4), pp. 381-396.
- Bitner, M. J., Brown, S. W., and Meuter, M. L. 2000. "Technology Infusion in Service Encounters," *Journal of the Academy of Marketing Science* (28:1), pp. 138-149.
- Böhmman, T., Junginger, M., and Krcmar, H. 2003. "Modular Service Architectures: A Concept and Method for Engineering It Services," *36th Annual Hawaii International Conference on System Sciences*, pp. 10-19.
- Bolton, R., and Saxena-Iyer, S. 2009. "Interactive Services: A Framework, Synthesis and Research Directions," *Journal of Interactive Marketing* (23:1), pp. 91-104.
- Breidbach, C. F., and Maglio, P. P. 2016. "Technology-Enabled Value Co-Creation: An Empirical Analysis of Actors, Resources, and Practices," *Industrial Marketing Management* (56), pp. 73-85.
- Chan, K. W., Yim, C. K., and Lam, S. S. K. 2010. "Is Customer Participation in Value Creation a Double-Edged Sword? Evidence from Professional Financial Services across Cultures," *Journal of Marketing* (74:3), pp. 48-64.
- Chin, W. W. 2010. "How to Write up and Report Pls Analyses," in *Handbook of Partial Least Squares – Concepts, Methods and Applications*, J.E. Gentle, W.K. Härdle and Y. Mori (eds.). Heidelberg, Germany: Springer, pp. 655-690.
- Crandell, C. 2016. "Customer Co-Creation Is the Secret Sauce to Success." Retrieved 2019-04-17, from https://www.forbes.com/sites/christinecrandell/2016/06/10/customer_cocreation_secret_sauce.
- Dong, B., Evans, K. R., and Zou, S. 2008. "The Effects of Customer Participation in Co-Created Service Recovery," *Journal of the Academy of Marketing Science* (36:1), pp. 123-137.
- Dong, B., and Sivakumar, K. 2017. "Customer Participation in Services: Domain, Scope, and Boundaries," (45:6), pp. 944-965.
- Edwards, J. R., and Lambert, L. S. 2007. "Methods for Integrating Moderation and Mediation: A General Analytical Framework Using Moderated Path Analysis," *Psychological Methods* (12:1), pp. 1-22.
- Fornell, C., and Larcker, D. F. 1981. "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error," *Journal of Marketing Research* (18:1), pp. 39-50.
- Froehle, C. M., and Roth, A. V. 2004. "New Measurement Scales for Evaluating Perceptions of the Technology-Mediated Customer Service Experience," *Journal of Operations Management* (22:1), pp. 1-21.
- Fronell, C. 1982. *A Second Generation of Multivariate Analysis Methods*. Praeger, New York.
- Gefen, D., Straub, D., and Boudreau, M.-C. 2000. "Structural Equation Modeling and Regression: Guidelines for Research Practice," *Communications of the Association for Information Systems* (4:1), pp. 1-76.
- Geisser, S. 1975. "The Predictive Sample Reuse Method with Applications," *Journal of the American Statistical Association* (70:350), pp. 320-328.
- Hair, J. F., Hult, G. T. M., Ringle, C., and Sarstedt, M. 2017. *A Primer on Partial Least Squares Structural Equation Modeling (Pls-Sem)*. Los Angeles: Sage Publications.
- Hair, J. F., Ringle, C. M., and Sarstedt, M. 2011. "Pls-Sem: Indeed a Silver Bullet," *Journal of Marketing Theory and Practice* (19:2), pp. 139-152.
- Henseler, J., and Chin, W. W. 2010. "A Comparison of Approaches for the Analysis of Interaction Effects between Latent Variables Using Partial Least Squares Path Modeling," *Structural Equation Modeling: A Multidisciplinary Journal* (17:1), pp. 82-109.
- Henseler, J., and Fassott, G. 2010. "Testing Moderating Effects in Pls Path Models: An Illustration of Available Procedures," in *Handbook of Partial Least Squares*. Springer, pp. 713-735.
- Henseler, J., Ringle, C. M., and Sarstedt, M. 2015. "A New Criterion for Assessing Discriminant Validity in Variance-Based Structural Equation Modeling," *Journal of the Academy of Marketing Science* (43:1), pp. 115-135.
- Homburg, C., and Stock, R. M. 2004. "The Link between Salespeople's Job Satisfaction and Customer Satisfaction in a Business-to-Business Context: A Dyadic Analysis," *Journal of the Academy of Marketing Science* (32:2), pp. 144-158.

- Homburg, C., Wieseke, J., and Hoyer, W. D. 2009. "Social Identity and the Service–Profit Chain," *Journal of Marketing* (73:2), pp. 38-54.
- Iman, N. 2016. "Modularity Matters: A Critical Review and Synthesis of Service Modularity," *International Journal of Quality and Service Sciences* (8:1), pp. 38-52.
- Karpen, I. O., Bove, L. L., Lukas, B. A., and Zyphur, M. J. 2015. "Service-Dominant Orientation: Measurement and Impact on Performance Outcomes," *Journal of Retailing* (91:1), pp. 89-108.
- Kenny, D. A. 2015. "Moderator Variables." Retrieved 2017-11-02, from <http://davidakenny.net/cm/moderation.htm>.
- Kumar, N., Stern, L. W., and Anderson, J. C. 1993. "Conducting Interorganizational Research Using Key Informants," *Academy of Management Journal* (36:6), pp. 1633-1651.
- Lacoste, S. 2016. "Sustainable Value Co-Creation in Business Networks," *Industrial Marketing Management* (52), pp. 151-162.
- Lewis, M. O., Mathiassen, L., and Rai, A. 2011. "Scalable Growth in It-Enabled Service Provisioning: A Sensemaking Perspective," *European Journal of Information Systems* (20:3), pp. 285-302.
- Lindell, M. K., and Whitney, D. J. 2001. "Accounting for Common Method Variance in Cross-Sectional Research Designs," *Journal of Applied Psychology* (86:1), pp. 114-121.
- Lusch, R. F., and Nambisan, S. 2015. "Service Innovation: A Service-Dominant Logic Perspective," *MIS Quarterly* (39:1), pp. 155-176.
- Maglio, P. P., and Spohrer, J. 2008. "Fundamentals of Service Science," *Journal of the Academy of Marketing Science* (36:1), pp. 18-20.
- McKinsey. 2019. "Solutions." Retrieved 2019-04-15, from <https://www.mckinsey.com/solutions>.
- Nambisan, S. 2002. "Designing Virtual Customer Environments for New Product Development: Toward a Theory," *Academy of Management Review* (27:3), pp. 392-413.
- Nambisan, S., and Baron, R. A. 2009. "Virtual Customer Environments: Testing a Model of Voluntary Participation in Value Co-Creation Activities," *Journal of Product Innovation Management* (26:4), pp. 388-406.
- Nambisan, S., Lyytinen, K., Majchrzak, A., and Song, M. 2017. "Digital Innovation Management: Reinventing Innovation Management Research in a Digital World," *MIS Quarterly* (41:1), pp. 223-238.
- Ostrom, A. L., Bitner, M. J., Brown, S. W., Burkhard, K. A., Goul, M., Smith-Daniels, V., Demirkan, H., and Rabinovich, E. 2010. "Moving Forward and Making a Difference: Research Priorities for the Science of Service," *Journal of Service Research* (13:1), pp. 4-36.
- Ostrom, A. L., Parasuraman, A., Bowen, D. E., Patrício, L., and Voss, C. A. 2015. "Service Research Priorities in a Rapidly Changing Context," *Journal of Service Research* (18:2), pp. 127-159.
- Paluch, S., and Blut, M. 2013. "Service Separation and Customer Satisfaction: Assessing the Service Separation/Customer Integration Paradox," *Journal of Service Research* (16:3), pp. 415-427.
- Peters, C., Blohm, I., and Leimeister, J. M. 2015. "Anatomy of Successful Business Models for Complex Services: Insights from the Telemedicine Field," *Journal of Management Information Systems* (32:3), pp. 75-104.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., and Podsakoff, N. P. 2003. "Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies," *Journal of Applied Psychology* (88:5), pp. 879-903.
- Rai, A., and Tang, X. 2014. "Information Technology-Enabled Business Models: A Conceptual Framework and a Coevolution Perspective for Future Research," *Information Systems Research* (25:1), pp. 1-14.
- Sambamurthy, V., Bharadwaj, A., and Grover, V. 2003. "Shaping Agility through Digital Options: Reconceptualizing the Role of Information Technology in Contemporary Firms," *MIS Quarterly* (27:2), pp. 237-263.
- Sawhney, M., Verona, G., and Prandelli, E. 2005. "Collaborating to Create: The Internet as a Platform for Customer Engagement in Product Innovation," *Journal of Interactive Marketing* (19:4), pp. 4-17.
- Scherer, A., Wunderlich, N. V., and von Wangenheim, F. 2015. "The Value of Self-Service: Long-Term Effects of Technology-Based Self-Service Usage on Customer Retention," *MIS Quarterly* (39:1), pp. 177-200.
- Sharma, S., Durand, R. M., and Gur-Arie, O. 1981. "Identification and Analysis of Moderator Variables," *Journal of Marketing Research* (18:3), pp. 291-300.
- Srivastava, S. C., and Shainesh, G. 2015. "Bridging the Service Divide through Digitally Enabled Service Innovations: Evidence from Indian Healthcare Service Providers," *MIS Quarterly* (39:1), pp. 245-268.

- Stock, R. M., and Zacharias, N. A. 2011. "Patterns and Performance Outcomes of Innovation Orientation," *Journal of the Academy of Marketing Science* (39:6), pp. 870-888.
- Stone, M. 1974. "Cross-Validatory Choice and Assessment of Statistical Predictions," *Journal of the Royal Statistical Society. Series B (Methodological)* (36:2), pp. 111-147.
- Troye, S. V., and Supphellen, M. 2012. "Consumer Participation in Coproduction: "I Made It Myself" Effects on Consumers' Sensory Perceptions and Evaluations of Outcome and Input Product," *Journal of Marketing* (76:2), pp. 33-46.
- Vargo, S. L., and Lusch, R. F. 2004a. "Evolving to a New Dominant Logic for Marketing," *Journal of Marketing* (68:1), pp. 1-17.
- Vargo, S. L., and Lusch, R. F. 2004b. "The Four Service Marketing Myths: Remnants of a Goods-Based, Manufacturing Model," *Journal of Service Research* (6:4), pp. 324-335.
- Vargo, S. L., and Lusch, R. F. 2008. "Service-Dominant Logic: Continuing the Evolution," *Journal of the Academy of Marketing Science* (36:1), pp. 1-10.
- Vargo, S. L., and Lusch, R. F. 2016. "Institutions and Axioms: An Extension and Update of Service-Dominant Logic," *Journal of the Academy of Marketing Science* (44:1), pp. 5-23.
- Vargo, S. L., and Lusch, R. F. 2017. "Service-Dominant Logic 2025," *International Journal of Research in Marketing* (34:1), pp. 46-67.
- Wold, H. 1966. "Estimation of Principal Components and Related Models by Iterative Least Squares," in *Multivariate Analysis*, P.R. Krishnaiah (ed.). New York: Academic Press, pp. 391-420.
- Yoo, Y. 2013. "The Tables Have Turned: How Can the Information Systems Field Contribute to Technology and Innovation Management Research?," *Journal of the Association for Information Systems* (14:5), pp. 227-236.

The Diverging Effect of Digitalization on Perceived Relational Conflict during Service Provisions – An Empirical Comparison of Suppliers and Customers in the B2B Context

- Authors:** Torben Stoffer, University of Passau, Germany
Thomas Widjaja, University of Passau, Germany
Nicolas Zacharias, Martin Luther University Halle-Wittenberg Halle (Saale), Germany
- Presented at:** 39th International Conference on Information Systems, San Francisco, USA.
- Published in:** Proceedings of the 39th International Conference on Information Systems (VHB-JQ3 rating: A).

Abstract

Digital service provision fundamentally changes the way how service suppliers and customers interact with each other. Therefore, service digitalization has numerous implications for the supplier-customer relationship, which are especially relevant in complex B2B settings. The goal of this study is to investigate the effect of service digitalization on perceived relational conflict in B2B relationships. For customers, extant literature has shown that they attribute problems during the provision of digital services to a larger extent to themselves than for non-digital services. In this case, according to attribution theory, they expect less compensation by the supplier and perceive less relational conflict during the provisions of digital services in comparison to non-digital services. Due to the reduced control by suppliers during the provision of digital services, they attribute the reasons for occurring problems more to the customers. In addition, the changed mode of communication results in less possibilities to get notice of and react appropriately to upcoming relational conflict. Hence, in contrast to the customers, suppliers perceive more relational conflict during the provision of digital services. Based on two datasets with responses from 147 IT supplier and 156 customer companies (303 companies in total), we show that service digitalization increases perceived relational conflict for the service suppliers and decreases perceived relational conflict for the customers. This divergent effect of service digitalization has various important theoretical and practical implications.

The Diverging Effect of Digitalization on Perceived Relational Conflict during Service Provisions – An Empirical Comparison of Suppliers and Customers in the B2B Context

Short Paper

Torben Stoffer

University of Passau

Innstraße 41, 94032 Passau, Germany
torben.stoffer@uni-passau.de

Thomas Widjaja

University of Passau

Innstraße 41, 94032 Passau, Germany
thomas.widjaja@uni-passau.de

Nicolas Zacharias

Technische Universität Darmstadt

Karolinenplatz 5, 64289 Darmstadt, Germany
zacharias@bwl.tu-darmstadt.de

Abstract

Digital service provision fundamentally changes the way how service suppliers and customers interact with each other. Therefore, service digitalization has numerous implications for the supplier-customer relationship, which are especially relevant in complex B2B settings. The goal of this study is to investigate the effect of service digitalization on perceived relational conflict in B2B relationships. For customers, extant literature has shown that they attribute problems during the provision of digital services to a larger extent to themselves than for non-digital services. In this case, according to attribution theory, they expect less compensation by the supplier and perceive less relational conflict during the provisions of digital services in comparison to non-digital services. Due to the reduced control by suppliers during the provision of digital services, they attribute the reasons for occurring problems more to the customers. In addition, the changed mode of communication results in less possibilities to get notice of and react appropriately to upcoming relational conflict. Hence, in contrast to the customers, suppliers perceive more relational conflict during the provision of digital services. Based on two datasets with responses from 147 IT supplier and 156 customer companies (303 companies in total), we show that service digitalization increases perceived relational conflict for the service suppliers and decreases perceived relational conflict for the customers. This divergent effect of service digitalization has various important theoretical and practical implications.

Keywords: Service Digitalization, Relational Conflict, B2B, PLS

Introduction

In recent years, a number of new digital business-to-business (B2B) services have been brought to market by either inventing new digital services or increasing the degree of digitalization of existing services. An example for the increase of services' degree of digitalization are the *McKinsey Solutions* (McKinsey 2018). McKinsey Solutions comprise a number of purely digital services (e.g., the optimization of price settings) that have former solely been performed by consultants (i.e., services with a low degree of digitalization). It is known that the shift from personal to digital service provision affects business relationships between

service suppliers and customers (e.g., Lusch and Nambisan 2015; Scherer et al. 2015). In this study, we investigate the effect of service digitalization on perceived relational conflict between suppliers and customers, which is an important facet of these business relationships (e.g., Fürst et al. 2017; Lacity and Willcocks 2017) that determines suppliers' costs and profits (Vosgerau et al. 2008). Following Kumar et al. (1995) and Palmatier et al. (2007), we define relational conflict as the behavior which impedes, blocks, or frustrates suppliers' or customers' goal pursuit.

Due to the high complexity and high divergence of B2B relationships, conflicts are often inevitable (Borys and Jemison 1989; Duarte and Davies 2003). To provide successful services and to stay competitive, B2B suppliers and customers try to minimize their conflicts during service provisions (Graca et al. 2015). Prior studies have shown that perceived conflict as a relationship characteristic is susceptible to perception differences between the involved parties (Lee and Johnsen 2012). In this study, we propose that the effect of service digitalization on perceived relational conflict may differ between suppliers and customers. From studies in the context of service provisions (e.g., Heidenreich et al. 2015; Meuter et al. 2000), we already know that during the provision of digital services customers attribute the reasons of problems to a larger extent to themselves compared to non-digital services. As these problems can lead to relational conflict, customers might perceive relational conflict less severe during the provision of digital services. Due to the stronger involvement of customers during the provision of digital services (Harris et al. 2006), suppliers have less control compared to non-digital services. Hence, suppliers attribute the reasons of occurring problems more to the customers (Harris et al. 2006; Heidenreich et al. 2015; Zhu et al. 2013). In addition, during the provision of digital services, less communication takes place between suppliers and customers. As a consequence, it becomes more difficult for suppliers to get notice of and resolve conflicts, which may lead to an overall higher level of relational conflict in their perception. In sum, this paper aims to investigate how service digitalization affects perceived relational conflict of B2B suppliers and customers. Thus, our central research question is:

Research question: How do suppliers and customers assess the impact of service digitalization on perceived relational conflict during service provisions in the B2B context?

Surprisingly, extant literature has often treated service digitalization as a binary concept by either considering services with a low or high degree of digitalization (e.g., Baird and Raghu 2015; Nambisan et al. 2017; Scherer et al. 2015). In contrast to these studies, we consider service digitalization as a continuum ranging from no digitalization to completely digital services as, for example, proposed by Froehle and Roth (2004). Following Böhmman et al. (2003), *service digitalization* is defined as the degree to which the service is provided by IT instead of personnel. Based on the understanding of digitalization as a continuum, our study is not limited to services with either a low or high degree of digitalization but considers also services with intermediate degrees of digitalization (e.g., a project management service, which consists of a consultant's work and a complementary software which is operated by the supplier and used by the customer). Hence, our study aims to investigate the phenomenon of service digitalization and its effects in more detail.

We contribute to research in three ways. First, we investigate the diverging effect of digitalization on relational conflict for suppliers and customers. By doing this, we add to research stating that perceptions of suppliers and customers can differ in B2B relationships (e.g., Lee and Johnsen 2012; Paluch and Wunderlich 2016). Hence, we provide further evidence that relationship factors (i.e., relational conflict) in the B2B context should be investigated for suppliers and customers separately. Second, by considering service digitalization as a continuum which reflects the degree to which services are provided by IT instead of personnel, we incorporate a larger number of services into our study and provide more nuanced results than prior works. Third, we follow calls requesting empirical research in the B2B context and on B2B relationships by empirically elaborating on the effect of service digitalization on relational conflict, which is one focal aspect of B2B relationships (e.g., Lee and Johnsen 2012; Paluch and Wunderlich 2016; Vosgerau et al. 2008). Additionally, we contribute to literature investigating the changes caused by the digitalization of services (e.g., Lusch and Nambisan 2015; Nambisan et al. 2017).

Our study yields important recommendations for practitioners as well. When introducing new digital services or increasing the degree of existing services, suppliers should reassess their view on the consequences of digitalization on relational conflict which play an important role for costs and uncertainty. Additionally, they are encouraged to find new ways to get notice of upcoming conflicts during the provision of digital services right after their occurrence.

The remainder of this paper is structured as follows. The next section introduces the conceptual background. Then, the research model including the hypotheses is developed. The fourth section describes the survey-based sample and the constructs' conceptualization. Afterwards, the constructs' measurement is validated and the research model including the hypotheses is assessed. The paper concludes with the discussion, limitations, and recommendations for future research.

Conceptual Background

Conflicts during B2B Service Provisions

B2B relationships are characterized by their relational characteristics (e.g., commitment, trust, conflict). These factors evolve over time and can either foster or impede the relationships between suppliers and customers (Dyer and Singh 1998). Conflict, which is a focal factor in our study, is mostly considered as destructive (e.g., Graca et al. 2015; Ramani and Kumar 2008). This destructive conflict leads to impeding dynamics in the relationships between customers and suppliers. However, some studies also add a constructive notion to conflicts, which is supposed to lead to beneficial dynamics (Song et al. 2006). In line with the major body of extant research, we only focus on the destructive part of conflicts in our study.

Although conflicts are present in every B2B relationship and reducing or resolving destructive conflicts is an important task for suppliers and customers alike (Powers et al. 2016), literature covering that topic in the B2B context is scarce. Powers et al. (2016) have shown that information sharing, problem solving, and conflict management are positively associated to service performance. Graca et al. (2015) have shown the positive impact of resolving destructive conflicts. Ndubisi (2011) has shown that all techniques handling conflicts are related to customer commitment and, hence, strengthen the importance of conflict handling for the relationship between suppliers and customers as well. Tuten and Urban (2001) put emphasize on the importance of good communication as a proactive way to avoid conflicts and foster the partnership between suppliers and customers.

Service Digitalization

Froehle and Roth (2004) classify services based on the role of technology used during service provisions. The same ideas is pursued by Böhmman et al. (2003) who state that personnel and/or IT resources are used during service provisions. In line with these conceptualizations, we define *service digitalization* as the degree to which the service is provided by IT instead of personnel. As a result, the degree of service digitalization can range from *low*, where the service is mainly provided by personnel (e.g., a consulting service, where the service provision consists of the consultants' work in the first place), to *high*, where the service is mainly provided by IT (e.g., software as a service, which is offered as a self-service for the customers). In addition, in line with our continuous conceptualization, service digitalization can take all intermediate forms (e.g., a project management service, which consists of a consultant's work and a complementary software which is operated by the supplier and used by the customer). In contrast to this approach, extant literature has often treated service digitalization as a binary concept (e.g., Baird and Raghu 2015; Nambisan et al. 2017; Scherer et al. 2015).

Research Model and Hypotheses Development

The research model, as illustrated in Figure 1 and explained in the following, was evaluated at the supplier as well as at the customer side. Relational conflict reflects behavior that impedes, blocks, or frustrates suppliers' or customers' goal pursuits (Kumar et al. 1995; Palmatier et al. 2007). As B2B relationships are very complex and frequently companies heavily rely on the outcomes of these relationships, conflicts are often inevitable (Borys and Jemison 1989; Duarte and Davies 2003). To explain the effects of service digitalization on perceived relational conflict, we draw on attribution theory. Attribution theory can be used to provide a framework of who is blamed for problems during service provisions (Harris et al. 2006). In our context, such problems, which can increase relational conflicts, are, for example, service failures or undesired outcomes of a service.

In line with attribution theory, the more customers consider a problem as the supplier's fault, the more they expect the supplier to take action by, for example, solve the problem, give a refund, apologize, or a combination of these (Harris et al. 2006; Heidenreich et al. 2015). Hence, customers perceive relational

conflict when they blame the supplier for a problem and expect a compensation (Keaveney 2008). In contrast, when customers consider a problem more as their own fault, they expect less compensation by the supplier but instead try to solve the problem by themselves (Harris et al. 2006; Zhu et al. 2013). In sum, attribution theory posits that solving a problem is up to the party which is considered as root of the problem. Hence, understanding to which party problems are attributed helps to understand how relational conflict are perceived.

Literature in the context of service provisions in the individual context has shown that during the provision of digital services customers attribute the reasons of occurring problems to a larger extent to themselves compared to non-digital services (e.g., Harris et al. 2006; Heidenreich et al. 2015; Meuter et al. 2000; Zhu et al. 2013). The reason for this shift in attribution is the increased involvement of the customer during the provision of digital services. Hence, customers perceive less relational conflict during the provision of digital services in comparison to non-digital services. Following Prince et al. (2016), we assume that personal perceptions form organizational conflicts in B2B relationships and transfer the findings on digital service provision to our context. Thus, we hypothesize:

Hypothesis 1 (H1): For customers, service digitalization is negatively associated with perceived relational conflict.

We propose that for suppliers the effect of service digitalization on perceived relational conflict is the opposite. During the provision of digital services, customers are stronger involved in the service provisions compared to non-digital services (Harris et al. 2006). Hence, during the provision of digital services, suppliers have less control over the service provision, which results in two effects. First, suppliers attribute the reasons for occurring problems more to the customers than to themselves (Harris et al. 2006; Heidenreich et al. 2015; Zhu et al. 2013). This leads to tensions in the relationship, which in turn increases the perceived relational conflict for the supplier. Second, suppliers have less possibilities to get notice of upcoming conflicts due to missing face-to-face communication, as it takes place during the provision of non-digital services (Murphy and Sashi 2018). Furthermore, especially in the B2B context, suppliers and customers are contingent on two-way and quality communication to resolve conflicts (e.g., Graca et al. 2015; Palmatier 2008; Palmatier et al. 2006; Ramani and Kumar 2008). Hence, suppliers are impeded to get notice of and resolve conflicts, which leads to a detachment with their customers and an overall higher level of relational conflict in their perception as well. Hence, we additionally hypothesize:

Hypothesis 2 (H2): For suppliers, service digitalization is positively associated with perceived relational conflict.

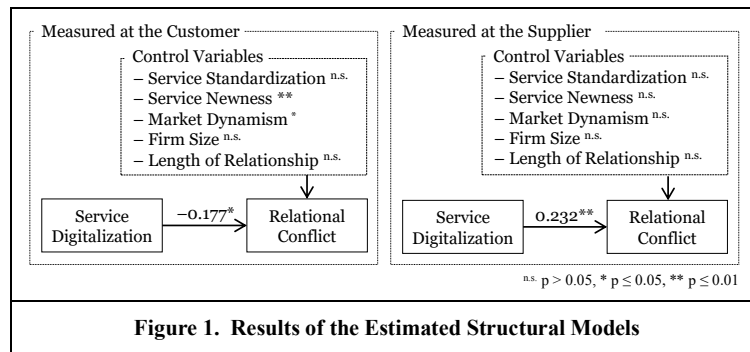
In addition, we consider the effects of variables which reflect service characteristics (i.e., service standardization and service newness) and company (i.e., market dynamism and firm size) as well as relationship (i.e., length of relationship) related factors. By including these variables, we control for alternative explanations of higher or lower perceived relational conflict of digital services.

Methodology

Two surveys among 147 representatives of IT suppliers and 156 representatives of companies receiving IT services (303 participants in total) were conducted between September and December 2017. We relied on a key informant approach (Kumar et al. 1993) by addressing the companies' sales managers as well as consultants (supplier survey) and the companies' managers who are involved in the buying processes (customer survey). Sales managers and consultants, who are involved in the marketing of IT services and/or their provision, as well as the managers involved in the buying processes should be knowledgeable about the characteristics of the offered services and business relationships as well as about general company characteristics used as control variables.

Sample

At the beginning of each of the two surveys, all participants had to self-report their level of knowledge about their company's processes and offered or received services respectively. To guarantee the validity of the answers, only representatives with a sufficient level of knowledge were included in the survey. We acquired the participants by ourselves and in cooperation with a market research firm.



We collected responses from representatives of 147 suppliers of IT services. Among these participants, 51% were consultants, 27% sales managers, and 12% general managers. On average, the representatives were working in their respective position for 8.0 years. The main offerings of the companies were IT system integration services (40%), IT infrastructure services (26%), business process services (19%), and general consulting services (9%). The companies had at least 50 and on average 3,200 employees.

In addition, we collected responses of 156 companies receiving IT services. Among these participants, 37% were working in the IT department, 24% were general managers, 13% were working in the buying department, and 10% were working in another department. In average, the representatives were working in their respective position for 7.3 years. The companies were located in the sectors industrial (22%), IT (18%), consumer products (14%), financials (10%), real estate (8%), public (7%), and education (6%). The companies had at least 50 and on average 2,800 employees.

Construct Conceptualization

At the beginning of each of the two surveys, all participants were asked to choose a service that they had offered to a customer or had received an offer for from a supplier respectively during the last six months and to describe the service in detail. Afterwards they were instructed to answer all questions which refer to service characteristics (e.g., service digitalization) or characteristics of their business relationship (e.g., relational conflict) against the background of that service and business relationship respectively.

For the measurement items, standard scale development procedures were applied, including the conduction of a comprehensive literature review. All constructs were measured reflectively. For all constructs except service digitalization existing measurement items were used which were modified or further developed when necessary¹ to match the study's context and the target group of the survey (i.e., suppliers or customers). As there is no established measurement for service digitalization, that is the degree of service provision which is done by IT, in the literature, a new scale was developed for measuring that construct. The measurement was inspired by literature (Böhmman et al. 2003; Froehle and Roth 2004) and discussed as well as validated in multiple interviews with practitioners. All items were pretested in interviews with twelve researchers and practitioners, which in combination ensured clarity of the items' formulations.

Results

To analyze our data, we use the variance-based partial least squares (PLS) method, which is a second-generation structural equation modelling technique (Hair et al. 2011; Wold 1966). PLS was chosen as it is especially suited for exploratory research (Hair et al. 2011), which applies to our investigation. With our samples comprising 147 supplier and 156 customer companies and the number of relationships between

¹ Due to the page limitations, we present the methodology and results in condensed form. Additional information (i.e., the measurement items, the descriptive statistics, the items' cross loadings, and the correlations between constructs) can be requested from the authors.

the constructs in our model, we achieve a statistical power of more than 80% for each model (Hair et al. 2017).

Measurement Model Assessment

The psychometric properties of the two measurement models are assessed separately for both samples. The assessments include testing of convergent validity, discriminant validity, and internal consistency reliability (Hair et al. 2017).

To ensure convergent validity, the item loadings and the average variance extracted (AVE) are assessed. In general, the outer loadings of the items on their respective construct should exceed 0.7 (Bagozzi et al. 1991; Hair et al. 2011). At the supplier survey, this is the case for all main constructs' items except the second item of service digitalization (cf., SD2) and all control variables' items except the first item of service standardization, the first and second item of service newness, and the second, third, and fourth item of service market dynamism. At the customer survey, this is the case for all main constructs except three items of service digitalization (cf., SD1, SD3, and SD4) and all control variables' items except the second and third item of service standardization and the third item of market dynamism. These outer loadings are slightly below the recommended threshold but still above the lower threshold of 0.4. As the measurement items are adapted from extant literature, the items should be kept to preserve the content validity of the constructs (Bagozzi et al. 1991; Hair et al. 2011). On the construct level, the AVEs are considered to ensure convergent validity. The AVE values for all constructs of both measurement models exceed the recommended threshold of 0.5 with the lowest value of 0.529 in the supplier and 0.516 in the customer data (Hair et al. 2011).

To assess discriminant validity, we test whether the items' loadings are greater than their cross-loadings on other constructs (Bagozzi and Yi 2012), the Fornell-Larcker criterion is met (Fornell and Larcker 1981), and the constructs' heterotrait-monotrait ratios (HTMT) do not exceed the given threshold of 0.90 (Henseler et al. 2015). The first criterion, investigating the item level, is established for both measurement models as all items load higher on their respective construct than on any other construct. On the construct level, the Fornell-Larcker criterion (Fornell and Larcker 1981) and the HTMT are applied. The Fornell-Larcker criterion is fulfilled for all constructs. Additionally, all constructs' HTMT values meet the threshold of 0.9 with the highest value of 0.542 in the supplier and 0.418 in the customer data (Henseler et al. 2015). In summary, discriminant validity can be assumed for both measurement models.

Internal consistency reliability comprises the assessment of Cronbach's α and composite reliability (CR). The values of Cronbach's α and CR should meet the lower threshold of 0.70 (Bagozzi and Yi 2012). With the lowest Cronbach's α of 0.778 in the supplier and 0.755 in the customer data and the lowest CR of 0.816 in the supplier and 0.803 in the customer data, the threshold is met for all constructs in both measurement models and, hence, internal consistency reliability is also given.

Structural Model Assessment

After ensuring the validity of the measurement models, first, the estimated structural model (cf., Figure 1) is analyzed and, second, the hypothesized relationships are assessed. To address potential collinearity issues between the exogenous latent variables, the Variance Inflation Factors (VIF) are examined. All VIF values are well below the threshold of 5 (Hair et al. 2011) with the highest VIF value of 1.213 in the supplier and 1.321 in the customer data. Hence, collinearity seems not to be an issue in both structural models.

To assess the significances of the path coefficients, a bootstrap procedure with 5,000 samples and individual sign changes was performed. In the customer model, the effect of service digitalization on relational conflict equals -0.177 and is significant (p-value of 0.013). Hence, the customer data confirms the negative impact from service digitalization on relational conflict which supports H1. In the supplier model, the effect of service digitalization on relational conflict equals 0.232 and is significant (p-value of 0.001). So, in contrast to the customer, the supplier data confirms a positive impact from service digitalization on relational conflict which supports H2. Hence, in response to our research question we can state that suppliers perceive a positive and customers a negative effect of service digitalization on relational conflict.

To show the robustness of the results, we additionally perform the permutation test (Chin and Dibbern 2010) and the PLS-MGA approach (Henseler et al. 2009). According to the permutation test, the path coefficients between service digitalization and relational conflict differ significantly (p-value of 0.002)

between suppliers and customers. Furthermore, according to the results of the PLS-MGA approach, the path coefficient for suppliers is significantly larger than for customers (p-value of 0.000). In conclusion, our supplemental analyses confirm our response to our research question given above.

Discussion, Limitations, and Future Research

Drawing on the empirical analyses of a total of 303 participants, we have shown that for customers (156 companies) service digitalization negatively and for suppliers (147 companies) positively influences the perceived relational conflict. Hence, our study reveals that the impact of service digitalization on perceived relational conflict differs for suppliers and customers. Our study contributes to theory in three ways.

First, we theoretically elaborated and empirically showed the diverging effect of digitalization on perceived relational conflict for suppliers and customers. By doing this, we extend and complement research stating that the perceptions of suppliers and customers in B2B relationships can differ (e.g., Lee and Johnsen 2012; Paluch and Wunderlich 2016). Following studies from an individual context, we argue that customers attribute the reasons for problems during the provision of digital services to a larger extent to themselves due to their increased involvement (Harris et al. 2006; Heidenreich et al. 2015; Meuter et al. 2000; Zhu et al. 2013). Due to the increased customer involvement, suppliers attribute the reasons for occurring problems to an increased extent to the customers. In addition, for them, it becomes more difficult to get notice of and resolve conflicts during the provision of digital services due to the lack of personal communication (Graca et al. 2015; e.g., Palmatier 2008; Palmatier et al. 2006; Ramani and Kumar 2008). With our results, we furthermore give empirical support for transferring these studies from the individual to an organizational context. In sum, we provide evidence for future research that relationship facets (i.e., relational conflict) in the B2B context are perceived differently by the involved parties and, therefore, should be investigated for each party individually.

Second, we enhance studies treating service digitalization as a binary concept (e.g., Baird and Raghu 2015; Nambisan et al. 2017; Scherer et al. 2015) by considering it as a continuum reflecting the degree to which the service is provided by IT instead of personnel. Hence, our conceptualization comprises a larger number of services and offers a more nuanced view on the phenomenon. This leads to results that can be better generalized. Additionally, we serve future research which can use our conceptualization of service digitalization in both the B2B and B2C context.

Third, we empirically elaborated on the effect of service digitalization on B2B relationships. By doing this, we followed literature calling for empirical research in the B2B context in general and in the context of B2B relationships in particular (e.g., Chan et al. 2010; Ostrom et al. 2010). Additionally, our study contributes to literature investigating the changes caused by the digitalization of services (e.g., Lusch and Nambisan 2015; Nambisan et al. 2017). By investigating the impact of service digitalization on relational conflict, which is an important characteristic of business relationships, we extend extant research only focusing on the costs advantages realized by service digitalization (Ba et al. 2010).

Our results also yield important insights for practitioners offering services in the B2B context as well. Due to the divergence regarding the effect of service digitalization on perceived relational conflict, suppliers should reassess their view on the consequences of digitalization when introducing new digital services or increasing the degree of existing services. In addition, they are encouraged to find new ways to get notice of upcoming relational conflict during the provision of digital services as early as possible (for example, by automatically analyzing the usage behavior of customers during the provision of digital services).

The findings of this research have to be interpreted in light of their limitations, which may provide an avenue for future research. Our study focuses on the influence of service digitalization on perceived relational conflict during an early phase of the service provision. Relational conflict can evolve over time (Dyer and Singh 1998) and, hence, also the impact of service digitalization on relational conflict might change. As explained in the theoretical background, conflicts can be constructive or destructive (Song et al. 2006). We consider only the destructive part of conflicts. Hence, future research could also consider the effect of service digitalization on the constructive part of conflict. Service provision and service recovery are two distinct parts during business relationships. We focused on the service provision and considered the attribution of problems during service provisions. Future research could additionally include the problem-solving process (i.e., service recovery) against the background of the services' and the service recoveries'

degree of digitalization. Possible results could comprise the influence of service digitalization on the most effective recovery strategy regarding its degree of digitalization.

In sum, we empirically investigated the effect of service digitalization on relational conflict in the B2B context and showed the divergence between suppliers and customers regarding the effect of service digitalization on perceived relational conflict. As part of this, we have offered more detailed results of the consequences of service digitalization compared to a large part of extant literature by considering the services' degree of digitalization as a continuum.

References

- Ba, S., Stallaert, J., and Zhang, Z. 2010. "Balancing It with the Human Touch: Optimal Investment in It-Based Customer Service," *Information Systems Research* (21:3), pp. 423-442.
- Bagozzi, R. P., and Yi, Y. 2012. "Specification, Evaluation, and Interpretation of Structural Equation Models," *Journal of the Academy of Marketing Science* (40:1), pp. 8-34.
- Bagozzi, R. P., Yi, Y., and Phillips, L. W. 1991. "Assessing Construct Validity in Organizational Research," *Administrative Science Quarterly* (36:3), pp. 421-458.
- Baird, A., and Raghu, T. S. 2015. "Associating Consumer Perceived Value with Business Models for Digital Services," *European Journal of Information Systems* (24:1), pp. 4-22.
- Böhmman, T., Junginger, M., and Krcmar, H. 2003. "Modular Service Architectures: A Concept and Method for Engineering It Services," *36th Annual Hawaii International Conference on System Sciences*, pp. 10-19.
- Borys, B., and Jemison, D. B. 1989. "Hybrid Arrangements as Strategic Alliances: Theoretical Issues in Organizational Combinations," *Academy of Management Review* (14:2), pp. 234-249.
- Chan, K. W., Yim, C. K., and Lam, S. S. K. 2010. "Is Customer Participation in Value Creation a Double-Edged Sword? Evidence from Professional Financial Services across Cultures," *Journal of Marketing* (74:3), pp. 48-64.
- Chin, W. W., and Dibbern, J. 2010. "A Permutation Based Procedure for Multi-Group Pls Analysis: Results of Test of Differences on Simulated Data and a Cross Cultural Analysis of the Sourcing of Information System Services between Germany and the USA," in: *Handbook of Partial Least Squares*. Springer, pp. 501-517.
- Duarte, M., and Davies, G. 2003. "Testing the Conflict-Performance Assumption in Business-to-Business Relationships," *Industrial Marketing Management* (32:2), pp. 91-99.
- Fornell, C., and Larcker, D. F. 1981. "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error," *Journal of Marketing Research* (18:1), pp. 39-50.
- Froehle, C. M., and Roth, A. V. 2004. "New Measurement Scales for Evaluating Perceptions of the Technology-Mediated Customer Service Experience," *Journal of Operations Management* (22:1), pp. 1-21.
- Fürst, A., Leimbach, M., and Prigge, J.-K. 2017. "Organizational Multichannel Differentiation: An Analysis of Its Impact on Channel Relationships and Company Sales Success," *Journal of Marketing* (81:1), pp. 59-82.
- Graca, S. S., Barry, J. M., and Doney, P. M. 2015. "Performance Outcomes of Behavioral Attributes in Buyer-Supplier Relationships," *Journal of Business & Industrial Marketing* (30:7), pp. 805-816.
- Hair, J. F., Hult, G. T. M., Ringle, C., and Sarstedt, M. 2017. *A Primer on Partial Least Squares Structural Equation Modeling (Pls-Sem)*. Los Angeles: Sage Publications.
- Hair, J. F., Ringle, C. M., and Sarstedt, M. 2011. "Pls-Sem: Indeed a Silver Bullet," *Journal of Marketing Theory and Practice* (19:2), pp. 139-152.
- Harris, K. E., Mohr, L. A., and Bernhardt, K. L. 2006. "Online Service Failure, Consumer Attributions and Expectations," *Journal of Services Marketing* (20:7), pp. 453-458.
- Heidenreich, S., Wittkowski, K., Handrich, M., and Falk, T. 2015. "The Dark Side of Customer Co-Creation: Exploring the Consequences of Failed Co-Created Services," *Journal of the Academy of Marketing Science* (43:3), pp. 279-296.
- Henseler, J., Ringle, C. M., and Sarstedt, M. 2015. "A New Criterion for Assessing Discriminant Validity in Variance-Based Structural Equation Modeling," *Journal of the Academy of Marketing Science* (43:1), pp. 115-135.
- Henseler, J., Ringle, C. M., and Sinkovics, R. R. 2009. "The Use of Partial Least Squares Path Modeling in International Marketing," *New Challenges to International Marketing* (20), pp. 277-319.

- Keaveney, S. M. 2008. "The Blame Game: An Attribution Theory Approach to Marketer–Engineer Conflict in High-Technology Companies," *Industrial Marketing Management* (37:6), pp. 653-663.
- Kumar, N., Scheer, L. K., and Jan-Benedict, E. M. S. 1995. "The Effects of Perceived Interdependence on Dealer Attitudes," *Journal of Marketing Research* (32:3), pp. 348-356.
- Kumar, N., Stern, L. W., and Anderson, J. C. 1993. "Conducting Interorganizational Research Using Key Informants," *Academy of Management Journal* (36:6), pp. 1633-1651.
- Lacity, M., and Willcocks, L. 2017. "Conflict Resolution in Business Services Outsourcing Relationships," *The Journal of Strategic Information Systems* (26:2), pp. 80-100.
- Lee, C.-J., and Johnsen, R. E. 2012. "Asymmetric Customer–Supplier Relationship Development in Taiwanese Electronics Firms," *Industrial Marketing Management* (41:4), pp. 692-705.
- Lusch, R. F., and Nambisan, S. 2015. "Service Innovation: A Service-Dominant Logic Perspective," *MIS Quarterly* (39:1), pp. 155-176.
- McKinsey. 2018. "Solutions." Retrieved 2018-03-21, from <https://www.mckinsey.com/solutions>.
- Meuter, M. L., Ostrom, A. L., Roundtree, R. I., and Bitner, M. J. 2000. "Self-Service Technologies: Understanding Customer Satisfaction with Technology-Based Service Encounters," *Journal of Marketing* (64:3), pp. 50-64.
- Murphy, M., and Sashi, C. M. 2018. "Communication, Interactivity, and Satisfaction in B2b Relationships," *Industrial Marketing Management* (68), pp. 1-12.
- Nambisan, S., Lyytinen, K., Majchrzak, A., and Song, M. 2017. "Digital Innovation Management: Reinventing Innovation Management Research in a Digital World," *MIS Quarterly* (41:1), pp. 223-238.
- Ndubisi, N. O. 2011. "Conflict Handling, Trust and Commitment in Outsourcing Relationship: A Chinese and Indian Study," *Industrial Marketing Management* (40:1), pp. 109-117.
- Ostrom, A. L., Bitner, M. J., Brown, S. W., Burkhard, K. A., Goul, M., Smith-Daniels, V., Demirkan, H., and Rabinovich, E. 2010. "Moving Forward and Making a Difference: Research Priorities for the Science of Service," *Journal of Service Research* (13:1), pp. 4-36.
- Palmatier, R. W. 2008. "Interfirm Relational Drivers of Customer Value," *Journal of Marketing* (72:4), pp. 76-89.
- Palmatier, R. W., Dant, R. P., and Grewal, D. 2007. "A Comparative Longitudinal Analysis of Theoretical Perspectives of Interorganizational Relationship Performance," *Journal of Marketing* (71:4), pp. 172-194.
- Palmatier, R. W., Dant, R. P., Grewal, D., and Evans, K. R. 2006. "Factors Influencing the Effectiveness of Relationship Marketing: A Meta-Analysis," *Journal of Marketing* (70:4), pp. 136-153.
- Paluch, S., and Wunderlich, N. V. 2016. "Contrasting Risk Perceptions of Technology-Based Service Innovations in Inter-Organizational Settings," *Journal of Business Research* (69:7), pp. 2424-2431.
- Powers, T. L., Sheng, S., and Li, J. J. 2016. "Provider and Relational Determinants of Customer Solution Performance," *Industrial Marketing Management* (56), pp. 14-23.
- Prince, M., Paliwadana, D., Davies, M. A. P., and Winsor, R. D. 2016. "An Integrative Framework of Buyer–Supplier Negative Relationship Quality and Dysfunctional Interfirm Conflict," *Journal of Business-to-Business Marketing* (23:3), pp. 221-234.
- Ramani, G., and Kumar, V. 2008. "Interaction Orientation and Firm Performance," *Journal of Marketing* (72:1), pp. 27-45.
- Scherer, A., Wunderlich, N. V., and von Wangenheim, F. 2015. "The Value of Self-Service: Long-Term Effects of Technology-Based Self-Service Usage on Customer Retention," *MIS Quarterly* (39:1), pp. 177-200.
- Song, M., Dyer, B., and Thieme, R. J. 2006. "Conflict Management and Innovation Performance: An Integrated Contingency Perspective," *Journal of the Academy of Marketing Science* (34:3), pp. 341-356.
- Tuten, T. L., and Urban, D. J. 2001. "An Expanded Model of Business-to-Business Partnership Formation and Success," *Industrial Marketing Management* (30:2), pp. 149-164.
- Vosgerau, J., Anderson, E., and William T. Ross, J. 2008. "Can Inaccurate Perceptions in Business-to-Business (B2b) Relationships Be Beneficial?," *Marketing Science* (27:2), pp. 205-224.
- Wold, H. 1966. "Estimation of Principal Components and Related Models by Iterative Least Squares," in: *Multivariate Analysis*, P.R. Krishnaiah (ed.). New York: Academic Press, pp. 391-420.
- Zhu, Z., Nakata, C., Sivakumar, K., and Grewal, D. 2013. "Fix It or Leave It? Customer Recovery from Self-Service Technology Failures," *Journal of Retailing* (89:1), pp. 15-29.

The Dark Side of Sales and Service Digitalization: Do They Amplify the Impact of Coercive Power Use on Relational Conflict in B2B Relationships?

Authors: Torben Stoffer, University of Passau, Germany
Thomas Widjaja, University of Passau, Germany
Nicolas Zacharias, Martin Luther University Halle-Wittenberg Halle (Saale), Germany

Presented at: – Doctoral Consortium of the International Conference on Exploring Service Science (IESS), 2018, Karlsruhe, Germany.
– Information System Brown-Bag Seminar, 2018, Passau, Germany.
– Doctoral Consortium of the School of Business, Economics and Information Systems of the University of Passau, 2018, Passau, Germany.

Submitted to: Information Systems Journal (VHB-JQ3 rating: A).
Currently under review.

Abstract

Digitalization of sales and service provisions fundamentally change how service providers and customers interact. In the B2B context, both types of digitalization are accompanied by various challenges with respect to how relationships between providers and customers must be managed in the sales process. One important consideration for business relationships that we focus on in this study is the use of coercive power. The use of coercive power is delicate because it has downsides, relational conflict being the most important. To help companies to determine the desirable degree of power use, we offer insights into how sales and service digitalization change the effect of coercive power use on relational conflict. We separately consider and compare the perceptions of the weaker and stronger parties in business relationships as well as the perceptions of customers and providers. To test our hypotheses, we use two datasets with responses from 147 IT provider and 156 customer companies (303 companies in total). For customers, we can show that sales and service digitalization moderate the relationship for the weaker, whereas there is no effect for the stronger parties. For providers, we find that service, but not sales digitalization, moderates the relationship for the weaker and that there is also no effect for the stronger parties. Our results contribute in multiple ways by distinguishing between sales and service digitalization, considering both forms as a continuum, providing empirical support that both forms are important contingency factors, and showing that procedural justice theory can be transferred to dependence research.

The Dark Side of Sales and Service Digitalization: Do They Amplify the Impact of Coercive Power Use on Relational Conflict in B2B Relationships?

The Dark Side of Sales and Service Digitalization

Torben Stoffer

Chair of Business Information Systems

University of Passau

Passau

Germany

Thomas Widjaja

Chair of Business Information Systems

University of Passau

Passau

Germany

Nicolas Zacharias

Lehrstuhl für Betriebswirtschaftslehre, insbesondere Marketing

Martin Luther University Halle-Wittenberg

Halle (Saale)

Germany

Number of words: 7439

Abstract

Digitalization of sales and service provisions fundamentally change how service providers and customers interact. In the B2B context, both types of digitalization are accompanied by various challenges with respect to how relationships between providers and customers must be managed in the sales process. One important consideration for business relationships that we focus on in this study is the use of coercive power. The use of coercive power is delicate because it has downsides, relational conflict being the most important. To help companies to determine the desirable degree of power use, we offer insights into how sales and service digitalization change the effect of coercive power use on relational conflict. We separately consider and compare the perceptions of the weaker and stronger parties in business relationships as well as the perceptions of customers and providers. To test our hypotheses, we use two datasets with responses from 147 IT provider and 156 customer companies (303 companies in total). For customers, we can show that sales and service digitalization moderate the relationship for the weaker, whereas there is no effect for the stronger parties. For providers, we find that service, but not sales digitalization, moderates the relationship for the weaker parties and that there is also no effect for the stronger parties. Our results contribute in multiple ways by distinguishing between sales and service digitalization, considering both forms as a continuum, providing empirical support that both forms are important contingency factors, and showing that procedural justice theory can be transferred to dependence research.

Keywords: Sales Digitalization, Service Digitalization, Coercive Power Use, Relational Conflict, B2B.

Introduction

In the last decade, digitalization has fundamentally changed the interaction between business-to-business (B2B) service providers and customers during the sales process (Lässig et al., 2015; World Economic Forum, 2017). In this study, we consider the changes induced by the digitalization of both service sales and service provisions. The McKinsey consulting firm's "McKinsey Solutions" are one example of an increase of digitalization in both dimensions (McKinsey, 2018). This offering comprises services that were once sold directly by McKinsey salespersons and provided by McKinsey consultants (i.e., it is a personal sale and a personal service provision) but are now sold online and provided as customer self-service (i.e., it is a digital sale and a digital service provision).

In this study, we consider sales and service digitalization not only as binary but as a continuum by following the conceptualizations of Böhmman, Junginger, and Krcmar (2003) and Froehle and Roth (2004). In particular, we define *sales digitalization* as the degree to which sales are performed by information technology (IT) rather than personnel and *service digitalization* as the degree to which services are provided by IT rather than personnel. Based on this understanding of digitalization, our study includes sales and services with degrees of digitalization ranging from very low to very high.

Challenges accompany both sales and service digitalization. Digital sales are challenging in comparison to non-digital sales, as they are characterized by weaker contact due to less personal face-to-face communication (Murphy & Sashi, 2018). Service digitalization reduces a salesperson's flexibility to

create individual offers, as the salesperson is often less involved in the provision of digital services, which are mainly provided by IT (Mitchell, 2006; Sambamurthy & Zmud, 1999; Tiwana & Kim, 2015).

The challenges raised by sales and service digitalization in the B2B context change in general how the relationships between providers and customers during the sales process must be managed. One important consideration for business relationships, our focus in this study, is the use of power. Power in B2B relationships results from asymmetric dependencies, which exist when a party (i.e., a customer or provider) is either less or more dependent on the respective other party. A less-dependent “stronger party” has the option to use its power, which can be either coercive or noncoercive. Coercive power likely has a negative impact (e.g., increased conflict), whereas noncoercive power may have a positive impact (e.g., increased cooperation) on business relationships (Hunt & Nevin, 1974; Lusch, 1976; Skinner, Gassenheimer, & Kelley, 1992). In this study, we focus on the coercive part of power use that is defined as the extent to which the stronger party shapes the business relationship to its advantage (Frazier, 1999; Heide & Miner, 1992; Schmitz, Schweiger, & Daft, 2016).

Following Emerson (1962), we consider the dependence of one party (i.e., the weaker party) as a necessary condition for coercive power use by the other party (i.e., the stronger party) in a business relationship. Stronger parties can then deliberately choose the extent to which they use their coercive power. This deliberate use of coercive power is delicate because it has downsides, relational conflict being the most important (e.g., Fürst, Leimbach, & Prigge, 2017; Griffith, Hoppner, Lee, & Schoenherr, 2017; Kelly & Scott, 2012). By following Kumar, Scheer, and Steenkamp (1995) and Palmatier, Dant, and Grewal (2007), we define *relational conflict* as behavior that impedes, blocks, or frustrates providers' or customers' goal pursuit.

To help companies offering or receiving B2B services to understand the effects of coercive power use on relational conflict, we investigate the moderating role of digitalization. As we consider sales and service digitalization, our first two research questions aim to illuminate the contingency effect of both sales digitalization and service digitalization on how coercive power use impacts relational conflict:

Research Question 1 (RQ1): How does sales digitalization moderate the effect of coercive power use on relational conflict during sales?

Research Question 2 (RQ2): How does service digitalization moderate the effect of coercive power use on relational conflict during sales?

When elaborating on power use and dependence, research in the B2B context has separately investigated the views and roles of the stronger and weaker parties and has shown that the two perceive the outcomes of power use and dependence differently (e.g., Morgan, Doran, & Morgan, 2018; Zhang, Zhuang, Yang, & Zhang, 2017). Hence, we distinguish between these two groups for the investigation of the moderating effects of sales and service digitalization:

Research Question 3 (RQ3): Do the moderating effects (see RQ1 and RQ2) differ for the weaker and stronger parties?

Prior studies have shown that relational conflict is experienced differently between the parties involved (e.g., Lee & Johnsen, 2012; Paluch & Wunderlich, 2016). To account for these differences in business relationships (i.e., between customers and providers), we consider the views of both parties separately:

Research Question 4 (RQ4): Do the moderating effects (see RQ1 and RQ2) differ for providers and customers?

Answering these research questions contributes to the state of knowledge in multiple ways. First, we provide a more fine-grained conceptualization of the digitalization phenomenon by differentiating between sales digitalization and service digitalization as well as by considering digitalization as a continuum. Second, we provide empirical support that sales and service digitalization are important contingency factors when elaborating on coercive power use and relational conflict. In addition, we integrate into our study the contingency factors in terms of weaker and stronger parties as well as in terms of customers and providers. Third, on a theoretical level, our study shows that procedural justice theory can be transferred to dependence research. To address this conceptual complexity from an empirical point of view, we make use of two samples (i.e., customers and providers) that include the perceptions of stronger and weaker parties.

The remainder of this paper is structured as follows. In the next section, we develop the research model including the hypotheses and the theoretical background. The third section describes the survey-based sample, comprising 303 providers and customers of B2B services (147 provider companies and 156 customer companies), and the constructs' conceptualization. We then validate the constructs' measurement and assess the research model, including the hypotheses. The paper concludes with the discussion, limitations, and recommendations for future research.

Research Model and Hypotheses Development

As Figure 1 shows, the study's conceptual research model consist of eight sub-models to account for the three contingency factors considered: sales and service digitalization (addressed by RQ1 and RQ2); weaker and stronger parties (addressed by RQ3); and the customer and provider samples (addressed by RQ4) To avoid ambiguity, we refer to these eight models according to the following schema: Moderator (either *Sales Digitalization (SalesD)* or *Service Digitalization (ServiceD)*) – Dependence (either *Stronger* or *Weaker*) – Sample (either *Customer* or *Provider*)

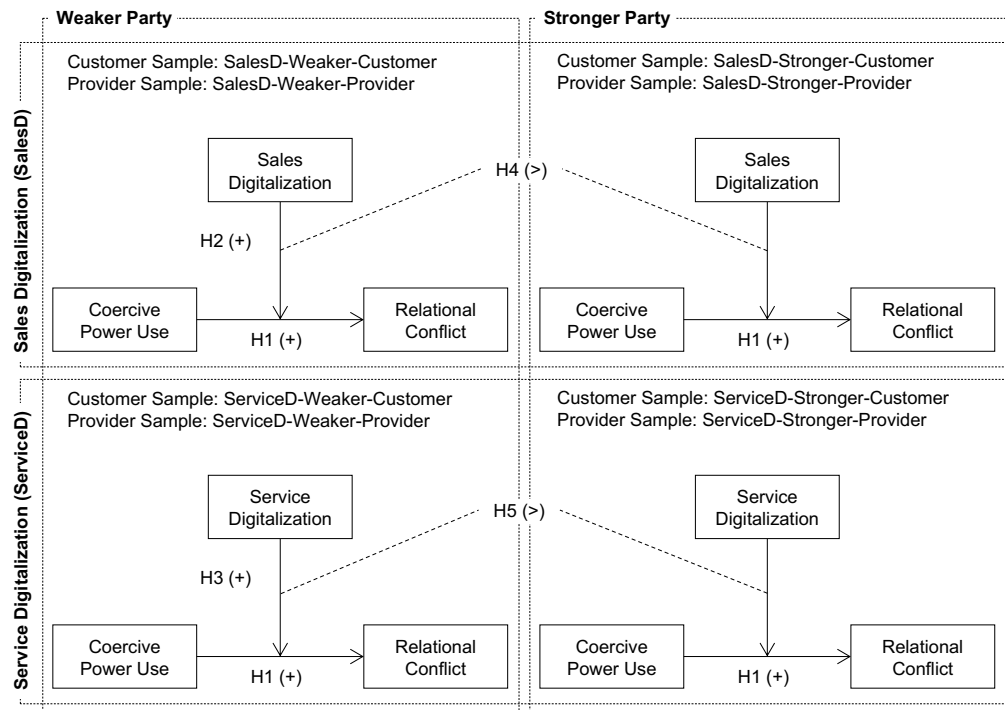


Figure 1: Conceptual Research Model

The literature suggests that coercive power use by stronger parties increases conflict in business relationships (e.g., Gaski, 1984; Gaski & Nevin, 1985; Lumineau & Malhotra, 2011; Lusch, 1976). Weaker parties must take actions they would not have taken otherwise or face undesirable disadvantages. In line with this, the weaker parties' operations are constrained and their decision autonomies are limited, which result in disagreements and conflicts (Geyskens, Steenkamp, & Kumar, 1999). Furthermore, the weaker parties are confronted with possible disadvantages if they do not comply. This leads to the weaker parties' realization of their limited choices during the sales, which increases the conflicts (Zhuang, Xi, & Tsang, 2010). As the two parties interact in these situations, both become aware of the increased level of conflict. Hence, we hypothesize:

Hypothesis 1 (H1): Coercive power use by more powerful parties during the sales process is positively associated with perceived relational conflict in the business relationships.

The literature also shows that customers evaluate the fairness of procedures and practices associated with sales and services. To explain the fairness of procedures and practices on an organizational level, we build upon the concept of *procedural justice*. This is in line with Brown, Cobb, and Lusch (2006), who have shown that policies and procedures seen as fair (i.e., procedural justice) in relationships between channel members are inversely related to manifest conflict, and that the more channel members perceive procedural justice, the more satisfied they are with that relationship. Furthermore, as procedures that are perceived as unfair lead to increased conflict (Bollen, Ittner, & C. Euwema, 2012;

Son & Kim, 2008), we apply procedural justice to explain the cause of conflicts investigated with our research model.

Procedural justice theory comprises two criteria: process control (i.e., having a voice in the process), and decision control (i.e., influencing the decision outcome) (Han, Rathindra, Jie, & Xin, 2014; Thibaut & Walker, 1975). Both criteria play an important role for perceived fairness, as they provide possibilities for weaker parties to produce more favorable outcomes (Hunton & Price, 1997; Phillips, 2002). Previous studies have also shown that both criteria can be applied to organizational settings (Ambrose, 2002; Xue, Liang, & Wu, 2011). In the following, we use the lack of process control to substantiate the moderating effect of sales digitalization (H2) and the lack of decision control as theoretical foundation of the moderating effect of service digitalization (H3).

To explore H2, we make use of the differences between digital and non-digital sales with respect to weaker parties having a voice (i.e., process control). Providing a weaker party with an opportunity to express its opinions, preferences, and concerns to the other party increases process control and hence procedural justice (Hunton & Beeler, 1997; Hunton & Price, 1997; Turel, Yuan, & Connelly, 2008). We propose that digital sales offer fewer possibilities for weaker parties to have a voice (i.e., process control) during the sales process. Hence, in the case of digital sales, it is more difficult for weaker parties to have a voice in reaction to the coercive use of power in comparison to non-digital sales, which comprise personal face-to-face communication with immediate responses (Murphy & Sashi, 2018). In sum, weaker parties, whether they are customers or providers (see RQ4), are hindered by sales digitalization to achieve the desired justice, which results in a stronger influence of coercive power use on relational conflict:

Hypothesis 2 (H2): For weaker parties, sales digitalization positively moderates the positive effect of coercive power use on perceived relational conflict during sales (see H1).

With respect to H3, we elaborate on salespersons' roles they will be undertaking in the subsequent service provisions. As effective IT decisions often require both business and IT knowledge (Mitchell, 2006; Sambamurthy & Zmud, 1999; Tiwana & Kim, 2015), we derive that sales and service provisions are often not co-located for digital services, which means that different departments within a company are involved in the sales process and service provision. In line with this, we propose that salespersons are involved in the service provisions of digital services, which are mainly provided by IT, to a smaller extent than during the provision of non-digital services. For example, consultants are often involved in the sales of their subsequent projects (i.e., high involvement of the salesperson during service provision). In contrast, digital services are provided by IT (i.e., low involvement of the salesperson during service provision), which cannot be influenced by the salesperson. Hence, salespersons are more flexible in creating offers (i.e., outcomes) when selling non-digital services than when selling digital services. Furthermore, non-digital services are often less standardized than digital services (Lewis, Mathiassen, & Rai, 2011). This lower degree of standardization leads to higher flexibility with respect to creating offers (i.e., outcomes) for salespersons when selling non-digital services. Hence, less standardization and being more involved in the service provision leads to a higher outcome flexibility of salesperson when creating offers for non-digital services in comparison to creating offers for digital services.

This increased outcome flexibility allows salespersons to create offers for non-digital services in ways that mitigate the negative consequences of the used coercive power. These opportunities to choose among a number of given outcomes strengthens weaker parties' possibilities to influence the decision outcome and, hence, increases their sense of decision control and as such procedural justice (Guo, Lotz, Tang, & Gruen, 2016; Hunton & Price, 1997). During the sales of digital services, in contrast, salespersons do not have the same flexibility due to the separation of the provisions from their person. Hence, the reduced number of possible offers during the sales of digital services, in comparison to non-digital services, lead to a decreased decision control of weaker parties. This is valid whether the weaker party is the provider or the customer (see RQ4). If customers are the weaker party, the salespersons have the flexibility to design offers in a way to keep the disadvantages for the customers as low as possible. If providers are the weaker party, the salespersons can choose among a smaller number of offers to keep the disadvantages for their own companies as low as possible as a reaction to the coercive power used by customers.

In sum, decreased outcome flexibility and higher standardization hinder the weaker parties in the context of high service digitalization to achieve the desired justice, which results in a stronger influence of coercive power use on conflict:

Hypothesis 3 (H3): For weaker parties, service digitalization positively moderates the positive effect of coercive power use on perceived relational conflict during sales (see H1).

Stronger parties can consciously choose the level of coercive power they use in their business relationships. Hence, in contrast to weaker parties, they can determine the level of conflict by making use of their coercive power to a greater or lesser extent. Thus, they do not need to raise concerns or choose among several offers in reaction to the use of coercive power during sales. As a consequence, they are not affected by reduced process control (i.e., more difficulties in having a voice) during digital sales or reduced decision control (i.e., less offers from which to choose) when selling or purchasing digital services. In sum, stronger parties have no issues related to lowered procedural justice in both cases. Therefore, we hypothesize:

Hypothesis 4 (H4): For stronger parties, the moderating effect of sales digitalization on the positive relationship between coercive power use and perceived relational conflict during sales (see H2) is smaller than for weaker parties.

Hypothesis 5 (H5): For stronger parties, the moderating effect of service digitalization on the positive relationship between coercive power use and perceived relational conflict during sales (see H3) is smaller than for weaker parties.

In addition, the literature shows that the prices of services (i.e., investment costs) are a main factor during sales negotiations, and that the length of business relationships leads to relational closeness (e.g., Koch & Schultze, 2011; Vosgerau, Anderson, & Ross, 2008). Therefore, we assume that higher investment costs increase and lengthier business relationships decrease relational conflict. To take these effects into account, we include both variables as controls for relational conflict in our model.

Research Method

Study Design and Data Collection

To evaluate the hypotheses of our research model, we used the Questback Enterprise Feedback Suite to design two online surveys targeting providers and customers, respectively. We defined our target providers as companies offering services in the context of information systems for businesses, and defined our target customers as companies receiving these services. On the provider side, we addressed both sales managers as well as consultants involved in the sales of the company's services as well as in the services' provision. On the customer side, we focused on managers involved in the buying process. Both surveys were conducted between September and December 2017.

At the beginning of the survey, participants had to choose a service they had offered to a customer or for which they had received an offer from a provider during the previous six months. Asking about sales completed during that period was our way of ensuring that participants were able to answer the survey questions. We also specified randomly whether a given participant should choose a successful or unsuccessful sales process (i.e., whether the customer adopted the offered service), thus eliminating a bias toward smooth business relationships. To deepen their focus on the chosen service and business relationship, participants were also asked to describe the service in detail. Furthermore, the service's name was used in the questions throughout the survey to maintain participant focus on the chosen business relationship and the chosen service.

We collected the answers for both samples (i.e., customer and provider) in cooperation with two market research firms. This yielded 156 customer responses and 126 provider responses. To increase the number of provider responses, we sent personalized email invitations to 849 provider sales managers in top- or second-level management. We offered as an incentive an executive-oriented post-survey management summary and recommended improvement measures. After one gentle reminder, we received 21 responses (2.5%). During this phase, we obtained feedback from non-respondents indicating that they could not participate in the survey due to privacy concerns. As this reason is not linked to the survey's topic, there is no indication of a non-response bias. The participation was strictly voluntary for all contacted persons.

Measures

We applied standard scale development procedures for the measurement items. We measured all constructs except sales digitalization and service digitalization (described in the next paragraph) by means of well-established scales. The measurement items were modified to match the study's context and the survey target groups (i.e., customers or providers). Table 3 in the Appendix lists all the constructs, including their measurement scales and source(s) for both surveys. All constructs were measured reflectively.

As current literature considers service digitalization mainly as a binary concept (e.g., Baird & Raghu, 2015; Nambisan, Lyytinen, Majchrzak, & Song, 2017; Scherer, Wunderlich, & von Wangenheim, 2015), it includes no established measurements for continuously measured sales digitalization and service

digitalization. So, we developed a new scale for measuring these constructs, adapting the guidelines provided by MacKenzie, Podsakoff, and Podsakoff (2011). The measurement scale was inspired by Froehle and Roth (2004) as well as Böhmann et al. (2003). Froehle and Roth (2004) consider the role of technology use during service provisions and Böhmann et al. (2003) distinguish between personnel and IT resources. In line with these conceptual thoughts, we conceptualize *sales digitalization* as the degree to which sales are performed by IT rather than personnel and *service digitalization* as the degree to which services are provided by IT instead of personnel (see Table 3 in the Appendix for the measurement scales). After formulating the items, we discussed and validated them in twelve interviews with researchers and practitioners involved in the topic. At the end of this process, all interviewees were satisfied with the final items' formulation.

To determine the stronger and weaker parties in each business relationship, we followed the approach of Kumar et al. (1995) and Gulati and Sytch (2007). In line with their approach, we measured the dependence of participants' firms on their chosen business partners (i.e., *Firm Dependence*; D_F) and vice versa (i.e., *Partner Dependence*; D_P). By comparing D_F and D_P , we determine whether participants' firms are the stronger ($D_F < D_P$) or weaker ($D_F > D_P$) parties in their respective business relationships (Gulati & Sytch, 2007; Kumar et al., 1995). That allow us to identify later whether participants' firms or their business partners are able to use coercive power in their business relationships, as only the stronger parties have this possibility (Emerson, 1962).

After composing the draft surveys for customers and providers, we had twelve researchers and practitioners who are knowledgeable about sales of services in the context of information systems review the surveys. They paid particular attention to whether our questions were clear and understandable and whether our terminology used in the questions was consistent. This final step ensured the clarity of the measurement items' formulation.

Samples

Some 147 providers and 156 customers completed the survey, yielding responses from 303 companies in total. Table 1 shows the characteristics of the representatives for both samples. To ensure that all participants were knowledgeable about the issues of concern, we had them rate their knowledge about their company's sales and buying processes as well as their company's business relationships, on a 7-point scale ranging from *very bad* to *very good*. Only those participants who gave ratings of four or higher were able to begin the survey.

Of the customer sample, 37% of participants worked in the IT department, 24% were general managers, 13% worked in the buying department, 11% were specialists of one sort or another, 9% were marketing managers, and 6% worked in some other department. The participants' companies were in various sectors: industrial (22%); IT (18%); consumer products (14%); financial (10%); real estate (8%); public (7%); education (6%); and others (15%)

Table 1: Sample Characteristics

Characteristic		Customer Sample	Provider Sample
N		156	147
Gender	Female	22%	21%
	Male	78%	79%
Age (in years)	Range	21 to 64	19 to 68
	Mean	43	42
Time at current employer (in years)	Range	1 to 31	0 to 37
	Mean	10.54	10.55
Distance to top management (in levels)	Range	0 to 10	0 to 8
	Mean	1.96	2.02

In the provider sample, 51% of the participants were consultants, 27% sales managers, 12% general managers, and 10% held other positions. The main offerings of the participants' companies were IT system integration services (40%), IT infrastructure services (26%), business process services (19%), general consulting services (9%), and other services (6%). Hence, the companies comprise a variety of services with different degrees of digitalization.

In combination with the characteristics shown in Table 1 and the measure described above, we concluded that all representatives were able to answer the questions validly regarding the offered services and corresponding business relationships.

As explained in the previous paragraph, we determined the stronger and weaker parties in each business relationship by comparing *Firm Dependence* (D_F ; dependence of the participants' firm on their chosen business partner) with *Partner Dependence* (D_P ; dependence of the chosen business partner on the participants' firm). Table 2 shows the samples sizes for each group. Please note that we focus only on the business relationships with a stronger or weaker party in the following and do not consider business relationships with symmetric dependences ($D_F = D_P$).

Table 2: Group-Sample Sizes

Stronger / Weaker Party	Customer Sample	Provider Sample
Customer stronger / Provider weaker	64	38
Customer weaker / Provider stronger	85	106
No stronger or weaker party ($D_F = D_P$)	7	3

Results

To assess both the measurement model and the structural model, we opted for consistent PLS (PLSc), which avoids potentially inflated loadings and path coefficients (Dijkstra & Henseler, 2015a, 2015b) as implemented in SmartPLS 3.2 (Ringle, Wende, & Becker, 2015).

Measurement Model Assessment

The psychometric properties of the measurement models are assessed separately for all eight models. The assessments include testing of convergent validity, discriminant validity, and internal consistency reliability (Hair, Hult, Ringle, & Sarstedt, 2017) as well as testing whether the data follow a common factor model, which is a requirement for using PLSc (Sarstedt, Hair, Ringle, Thiele, & Gudergan, 2016). Additionally, we test for potential common method biases (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

To ensure convergent validity, we assessed the item loadings and the average variance extracted (AVE). All outer loadings of the items on their respective construct (see Table 5 to Table 10 in the Appendix) exceed the threshold of .7, with the lowest value of .709 for the third item of relational conflict (RC3) in the model *ServiceD-Stronger-Provider* (Bagozzi, Yi, & Phillips, 1991; Hair, Ringle, & Sarstedt, 2011). On the construct level, the AVEs are considered to ensure convergent validity. The AVE values for all constructs of the measurement model (see Table 13 to Table 18 in the Appendix) exceed the recommended threshold of .5, with the lowest value of .766 for the construct relational conflict in the models *SalesD-Stronger-Customer* and *ServiceD-Stronger-Customer* (Hair et al., 2011).

To assess discriminant validity, we test whether the items' loadings are greater than their cross-loading on the other constructs (Bagozzi & Yi, 2012), whether the Fornell-Larcker criterion is met (Fornell & Larcker, 1981), and whether the constructs' heterotrait-monotrait ratios (HTMT) do not exceed the given threshold of .9 (Henseler, Ringle, & Sarstedt, 2015). The first criterion, which investigates the item level, is given as all items load highest on their respective construct (see Table 5 to Table 10 in the Appendix). In addition, the Fornell-Larcker criterion is fulfilled for all constructs, and the square roots of all constructs exceed their highest correlation with any other construct (see Table 21 to Table 28 in the Appendix). Additionally, all constructs' HTMT values (see Table 30 to Table 35 in the Appendix) meet the threshold of .9, with the highest value of .469 between coercive power use and relational conflict for the models *SalesD-Weaker-Provider* and *ServiceD-Weaker-Provider* (Henseler et al., 2015). In summary, discriminant validity can be assumed for all measurement models.

Internal consistency reliability comprises the assessment of Cronbach's α , composite reliability (CR), and ρ_A (Dijkstra & Henseler, 2015b). All values of Cronbach's α , CR, and ρ_A (see Table 13 to Table 18 in the Appendix) meet the lower threshold of .7, with the lowest value of .930 for Cronbach's α and .927 for CR for relational conflict in the models *SalesD-Stronger-Customer* and *ServiceD-Stronger-Customer*, and .943 for ρ_A for coercive power use in the model *SalesD-Stronger-Provider* (Bagozzi & Yi, 2012; Dijkstra & Henseler, 2015b). Hence, internal consistency reliability is also met for all measurement models.

We assume that our data follow a common factor model. To test this assumption, we use the Standardized Root Mean Square Residuals (SRMR). All SRMR values (see Table 37 in the Appendix) meet the upper threshold of .08, with the highest value of .075 for the model *ServiceD-Stronger-Provider* (Hair et al., 2017; Hu & Bentler, 1998). Hence, we can confirm that our data are common factor-based and the application of PLSc is suitable.

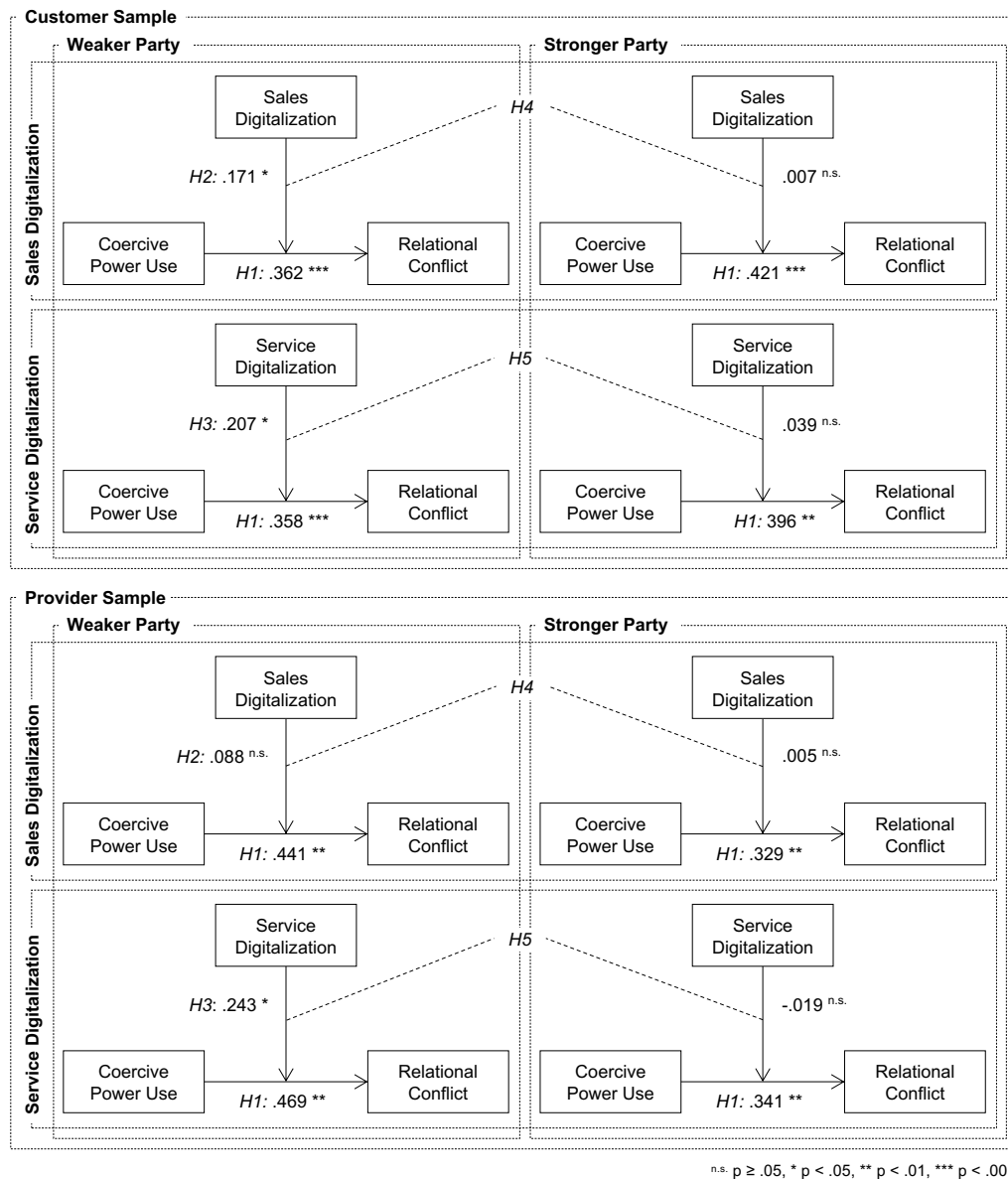


Figure 2: Results of the Estimated Structural Models

Finally, we test for a potential common method bias (Podsakoff et al., 2003) by examining the correlation matrices and the Variance Inflation Factors (VIF) generated via a full collinearity test. First, all correlation between the constructs are below .9, which otherwise would have shown evidence for the common method bias, with the highest value of .594 between relational conflict and service digitalization in the model *ServiceD-Weaker-Provider* (Pavlou, Liang, & Xue, 2007). Second, all VIF values generated via a full collinearity test are well below the threshold of 3.3, with the highest value of 1.841 between relational conflict and investment costs in the model *ServiceD-Weaker-Provider* (Kock,

2015). Hence, neither test shows any indication of the existence of common method bias in the two surveys.

Structural Model Assessment

After ensuring the validity of the measurement models, the estimated structural models (Figure 2) are analyzed. The hypothesized relationships are then assessed by performing bootstrap procedures with 5,000 samples each and individual sign changes (see Table 40 to Table 43 in the Appendix for all path coefficients, p-values, and 95% confidence intervals).

To address potential collinearity issues between the exogenous latent variables, the Variance Inflation Factors (VIF) are examined. All VIF values are well below the threshold of 5 (Hair et al., 2011; Jason & Perrewé, 2002), with the highest VIF value of 1.149 for Investment Cost for the model *SalesD-Weaker-Provider*. Hence, collinearity seems not to be an issue in the structural models.

H1 addresses the effect of coercive power use by stronger parties on relational conflicts in business relationships. The direct effect between coercive power use and relational conflict is significantly positive for all models (see Figure 2 and Table 40 to Table 43 in the Appendix), which confirms H1.

H2 and H3 address the moderating effects of sales digitalization and service digitalization, respectively, on the effect of coercive power use on relational conflict for weaker parties. We follow the suggestions of Henseler and Chin (2010) and model the moderations via the two-stage approach. We follow the procedures proposed by Hair et al. (2017) and Sharma, Durand, and Gur-Arie (1981) to test the moderations. For sales digitalization (H2), the moderating effect is significantly positive (path coefficient of .171 and p-value of .044) for the customer sample (*SalesD-Weaker-Customer*) and not significant (path coefficient of .088 and p-value of .458) for the provider sample (*SalesD-Weaker-Provider*). For the customer sample, the f^2 value is .033, which is considered as a large moderating effect (Hair et al., 2017; Henseler & Fassott, 2010; Kenny, 2015). As the direct effect between sales digitalization and relational conflict is not significant (path coefficient of .130 and p-value of .134), we can confirm a “pure moderator” (Sharma et al., 1981). Hence, H2 can be partly confirmed. For service digitalization (H3), the moderating effects are significantly positive both for the customer (path coefficient of .207 and p-value of .023; *ServiceD-Weaker-Customer*) and provider sample (path coefficient of .243 and p-value of .026; *ServiceD-Weaker-Provider*). The f^2 values equal .046 and .115 for the customer and provider sample, respectively. Hence, they are also considered as large moderating effects (Hair et al., 2017; Henseler & Fassott, 2010; Kenny, 2015). As the direct effects between service digitalization and relational conflicts are significant for both samples (path coefficients of .288 and .564 and p-values of .007 and .000 for the customer and provider sample, respectively), we have two “quasi moderators” (Sharma et al., 1981).

H4 and H5 address the differences in moderating effects of sales digitalization and service digitalization, respectively, between the weaker and stronger parties. We performed one-sided unpaired t-tests to test for the differences between the moderators in each sample. For sales digitalization (i.e., H4), the moderating effect of the model in which the customer is the weaker party (path coefficient of .171; i.e., *SalesD-Weaker-Customer*) is significantly larger (t-value of 13.523 and p-value of .000) than the moderating effect of the model in which the customer is the stronger party (path coefficient of .007;

SalesD-Stronger-Customer). As the moderating effect of sales digitalization (H4) could not be confirmed for the providers, we cannot test the moderating effects' difference. Hence, we can also only confirm that the moderating effect for the weaker party is greater than for the stronger party for the customer sample. Thus, H4 can only be partly confirmed.

For service digitalization (H5), the moderating effect of the model in which the customer is the weaker party (path coefficient of .207; *ServiceD-Weaker-Customer*) is significantly larger (t-value of 11.505 and p-value of .000) than the moderating effect of the model in which the customer is the stronger party (path coefficient of .039; *ServiceD-Stronger-Customer*). In addition, the moderating effect of the model in which the provider is the weaker party (path coefficient of .243; *ServiceD-Weaker-Provider*) is significantly larger (t-value of 13.902 and p-value of .000) than the moderating effect of the model in which the provider is the stronger party (path coefficient of .243; *ServiceD-Weaker-Provider*). Hence, H5 can be fully confirmed.

In addition, we tested the impact of the two control variables investment costs and length of business relationship. Both variables have no significant effect on relational conflict in any model (see Table 40 to Table 43 in the Appendix).

Supplementary Analyses

In addition to testing the main model as described above, we performed two supplemental analyses to show the robustness of our results. First, we determined whether the sample sizes in all models are large enough to ensure statistical validity. Second, we additionally considered a direct effect between sales and service digitalization, respectively, on coercive power use.

To test whether our four groups in Table 2 are large enough to test our structural models in Figure 2, we first used the power table as proposed by Cohen (1992). For a significance level of 5%, a statistical power of 80%, and the obtained R^2 (see Table 44 in the Appendix), all group sizes exceed the required sample size. In addition, we performed a post-hoc power analysis with G*Power, as suggested by Hair et al. (2017). The results yield statistical power values with at least 86% (see Table 44 in the Appendix), which is above the convention of 80% (Hair et al., 2017; Wetzels, Odekerken-Schröder, & van Oppen, 2009). Hence, we can confirm statistical validity of the results obtained in the previous section.

To account for an impact of sales and service digitalization, respectively, on coercive power use and vice versa, we also tested our research models by considering corresponding effects (i.e., a path pointing from sales and service digitalization, respectively, to coercive power use in the structural models, as well as a path pointing from coercive power use on sales and service digitalization, respectively). All results (see Table 45 to Table 48 in the Appendix) show to be robust to these additional constraints.

Discussion

Drawing on the empirical analysis of 303 companies (156 customer companies and 147 provider companies), this study has shown that for customers, sales and service digitalization positively moderate the effect of coercive power use on relational conflict if the customer is the weaker party in a

business relationship (H2 and H3). Furthermore, this moderating effect is lesser and even insignificant if the customer is the stronger party in a business relationship (H4 and H5). For providers, the same effects can be confirmed only for service digitalization (H3 and H5). For sales digitalization, the moderation does not show to be significant, whether the provider is the weaker or stronger party (H2).

The finding for H2 is somewhat unexpected. What might be the explanation? As hypothesized above, interacting with digital sales tools hinders the weaker parties from achieving the desired justice because of the absence of having a voice. This is because digital sales processes are driven mainly by IT of the providers, which restricts the ability of the people involved on the customer side to interact with other actual people. This, for example, is the case when the providers sell their services via online shops (i.e., high degree of digitalization), which are then used by the customers' personnel. However, digitalization on the provider side does not hinder providers from contacting customers in other ways (e.g., by phone) from having a voice. Hence, they do not encounter the related hurdle created by digital sales (i.e., process control) to the same extent as customers. Therefore, this asymmetric consequence of sales digitalization for customers and providers could explain the non-significant moderating effect of sales digitalization (H2) for the providers.

Our study contributes in three ways. First, whereas the literature has considered digitalization either in the form of sales digitalization (e.g., Gorla, Chiravuri, & Chinta, 2017; Langer, Forman, Kekre, & Sun, 2012) or service digitalization (e.g., Baird & Raghu, 2015; Paluch & Wunderlich, 2016; Scherer et al., 2015), we provide a more fine-grained conceptualization of the construct digitalization by differentiating between sales digitalization and service digitalization, as well as by considering digitalization as a continuum. By drawing this distinction in investigating a specific phenomenon, we explicitly treat digitalization in a more detailed manner. In particular, by showing that for weaker providers only service digitalization moderates the effect of coercive power use on relational conflict, we provide empirical support for the idea that the effects of the two forms of digitalization can differ. Hence, further research could extend the results in the literature by taking the two forms into account as well. Scholars could, for example, build on the work of Gorla et al. (2017) by extending their model to the adoption of services, in addition to the adoption of sales channels, to identify similarities and differences in the importance of the adoption factors, which could provide valuable insights.

In addition, the literature has treated sales digitalization and service digitalization primarily as a binary concept (e.g., Gorla et al., 2017; Paluch & Wunderlich, 2016; Scherer et al., 2015). This neglects that both forms of digitalization are more fine-grained in practice (e.g., we observed a degree of sales digitalization of 60% and service digitalization of 56%, on average, in our dataset). Hence, researchers could benefit from our operationalization. For example, by incorporating our conceptualization of sales digitalization, scholars could identify differing influences of the adoption factors of digital sales identified by Gorla et al. (2017) for different degrees of digitalization, and could provide an even more precise alignment between customers and sales channels with different degrees of digitalization by building on the results of Langer et al. (2012). By incorporating our conceptualization of service digitalization, scholars could extend the work of Baird and Raghu (2015) by also considering variations in the providers business models with respect to their degree of digitalization; and the work of Paluch and Wunderlich (2016) by identifying the varying importance of the considered risks for B2B customers'

overall risk perception, depending on the services' degree of digitalization. In sum, we have collected empirical evidence that considering digitalization as a continuum and distinguishing between sales and service digitalization could lead to new insights, which could be applied to studies in both the B2B and business-to-consumer contexts.

Second, we contribute to theory by investigating the influence of coercive power use on relational conflict. The literature has shown that stronger and weaker parties in business relationships are affected differently by the outcomes of power use (e.g., Morgan et al., 2018; Zhang et al., 2017) and that relational conflict is considered differently by the parties involved (e.g., Lee & Johnsen, 2012; Paluch & Wunderlich, 2016). Nevertheless, a number of studies focus only on the perceptions of the stronger or weaker parties (e.g., Rindt & Mouzas, 2015; Van den Abbeele, Roodhooft, & Warlop, 2009; Zhuang et al., 2010) or on the perceptions of customers or providers (e.g., Frazier & Rody, 1991; Rindt & Mouzas, 2015) when elaborating on power use in business relationships. In our study, we integrate these insights by distinguishing between stronger and weaker parties (RQ3) as well as between customers and providers (RQ4), all known contingency factors. We also include and compare sales (RQ1) and service digitalization (RQ2) as new, additional contingency factors with respect to the effect of coercive power use on relational conflict. Our results show that for customers, weaker parties perceive the influence of sales and service digitalization to be more severe than stronger parties, while for providers this effect can be shown only for service digitalization and not for sales digitalization. Therefore, we provide empirical evidence that it is necessary to include the new sales and service digitalization contingency factors as well as the known ones when elaborating on coercive power use in business relationships between customers and providers in both digital and non-digital settings. We also expect results from the literature in the context of power use to differ when both the degree of sales and service digitalization are considered. For example, we expect the role of private rules, as in the study of Rindt and Mouzas (2015), to differ during the sales of digital and non-digital services. In addition, we expect that the role of *guanxi*, which Zhuang et al. (2010) define as emotional closeness and interactive state between employees, changes in the context of coercive power use and conflict during digital or non-digital sales. In sum, we provide empirical evidence that the existing knowledge obtained in the context of non-digital sales and for non-digital services cannot be transferred without adjustments to digital sales and digital services as they are commonly employed today.

Third, on a more abstract level, our empirical results support that procedural justice theory (Han et al., 2014; Thibaut & Walker, 1975) can be transferred to dependence research (Gulati & Sytch, 2007; Kumar et al., 1995). In particular, we show that for one specific instance of procedural justice theory (i.e., sales digitalization as a representation of process control and service digitalization as a representation of decision control) it affects the mechanism between coercive power use and relational conflict and, hence, dependence research. By transferring procedural justice theory to that research stream, our perspective may be helpful for others. The literature on dependence research has observed phenomena that can be attributed to the procedural justice theory as well and, thus, provides examples for additional moderators that differ in their relation to procedural justice. For example, the private rules investigated by Rindt and Mouzas (2015) as a means to use power can be related to decision control, as they constrain outcomes (i.e., contracts) in a manner similar to the degree of service digitalization in our study. Van den Abbeele et al. (2009) have shown that possessing detailed total cost of ownership

information moderates the effect of coercive power use only for weaker and not for stronger customers. Having detailed information can be related to process control, which in our study is represented by service digitalization.

Our results also yield important insights for practitioners offering or receiving services in the B2B context. Providers offering services via channels with different degrees of digitalization (i.e., sales digitalization) or offering services with a wide range of digitalization (i.e., service digitalization) need insights into how to manage their business relationships. Our study offers salespersons and key account managers insights into the consequences of coercive power use. When they are the stronger parties, we encourage them to use their coercive power carefully during digital sales and make use of the possibilities of non-digital services to mitigate the consequences of their coercive power use for customers. In addition, when they are the weaker party, they should find ways to increase the flexibility of their digital services to increase in turn their flexibility to absorb the coercive power used against them. When customers are the weaker parties in business relationships, we encourage them to find ways to lower the degree of digitalization in the sales process by, for example, actively getting in personal contact with a salesperson even when buying via an online shop.

The findings of this research must be interpreted in light of their limitations, which may provide an avenue for future research. In this study, we focus on coercive power use and its influence on relational conflict. As introduced above, the literature distinguishes between coercive and noncoercive power, which has a more positive impact (e.g., increased cooperation) on business relationships (Hunt & Nevin, 1974; Skinner et al., 1992). Hence, future research could also consider the positive aspects of power use on various facets of business relationships against the background of sales and service digitalization. We focus on conflict at the beginning of business relationships (i.e., at the end of the sales process). As the impact of coercive power use on relational conflict has been found to be a dynamic process that changes over time (Morgan et al., 2018), our investigations could be replicated for different points in time in business relationships. For the moderating effect of sales digitalization, we found differences for customers and providers that occur due to the asymmetric consequences of sales digitalization explained above. In addition to direct selling, services can also be sold via (digital) platforms. In this case, both customers and providers interact with an IT system and, hence, the network of relationships changes. Therefore, it would be interesting if the observed moderating effects can be replicated in those settings. Today's advances in artificial intelligence seek to imitate human behavior as well as possible. As these advances also affect chatbots, which can be used during sales (i.e., sales with a high degree of digitalization), future research should also consider different forms of sales digitalization.

Appendix

Table 3: Measurement Items for the Constructs

	Provider Survey	Customer Survey
Sales Digitalization (SalesD)		
Percentage scale between 0% and 100% with steps of 5%		
ServiceD1	Please rate the percentage of the sales process for the chosen service which is done by IT-systems.	
Service Digitalization (ServiceD)		
Percentage scale between 0% and 100% with steps of 5%		
ServiceD1	Please rate the percentage of the provision of the chosen service which is done by IT-systems.	
Coercive Power Use (CPU)		
Adapted from Heide and Miner (1992) and Emerson (1962) 7-Point Likert scale with anchors 1 = "strongly disagree" and 7 = "strongly agree"		
CPU1	In this relationship, the dominant party uses its power advantage to influence this relationship to its own benefit.	
CPU2	The dominant party uses the unequal balance of power to the detriment of the weaker party.	
CPU3	The more powerful party uses the relation of dependence to extract a greater benefit from the relationship.	
Relational Conflict (RC)		
Adapted from Kumar et al. (1995) and Palmatier et al. (2007) 7-Point Likert scale with anchors 1 = "strongly disagree" and 7 = "strongly agree"		
RC1	I consider that the relationship with the customer is affected by opportunistic behavior.	I consider that the relationship with this provider is affected by opportunistic behavior.
RC2	I consider our relationship with the customer to be antagonistic.	I consider our relationship with the provider to be antagonistic.
RC3	I consider our relationship with the customer to be frustrating.	I consider our relationship with the provider to be frustrating.
RC4	I consider our relationship with the customer to be conflictful.	I consider our relationship with the provider to be conflictful.
Firm Dependence (FD)		
Adapted from Mallapragada, Grewal, Mehta, and Dharwadkar (2015) 7-Point Likert scale with anchors 1 = "strongly disagree" and 7 = "strongly agree"		
FD1	It would be relatively easy for our company to find other firms to do business with.	If our company decided to stop doing business with the provider, we can easily replace them with one of equal status.
FD2	If the customer stopped buying from our company, we can easily replace their sales volume with sales to someone else.	Our business can be easily adapted to using services from a different provider.

FD3	If the relationship with the customer would be terminated, our company would not be hurt.	There are many competitive providers with whom our company can do business.
Partner Dependence (PD)		
Adapted from Mallapragada et al. (2015) 7-Point Likert scale with anchors 1 = "strongly disagree" and 7 = "strongly agree"		
PD1	If the customer decided to stop doing business with our company, they can easily replace us with one of equal status.	If our company stopped buying from the provider, they can easily replace our sales volume with sales to someone else.
PD2	The customer's business can be easily adapted to using services from a different provider.	It would be relatively easy for the provider to find other firms to do business with.
PD3	There are many competitive providers with whom the customer can do business.	If the relationship with the provider would be terminated, their company would not be hurt.
Investment Costs (IC)		
Adapted from Benaroch, Lichtenstein, and Robinson (2006) Selection among predefined ranges in EUR with the boundaries 50,000, 0.1 million, 0.5 million, 1 million and 5 million as well as more than 5 million		
IC1	What is the amount in EUR approved for this service?	
Length of Business Relationship (LBR)		
Adapted from Homburg, Wieseke, and Hoyer (2009)		
LBR1	How many years does this business relationship exist?	

Table 4: Loadings and Cross Loadings of the Items for the Model SalesD-Weaker-Customer

Item	SalesD	CPU	RC	IC	LBR
SalesD1	1.000	0.098	0.103	0.050	0.053
CPU1	0.077	0.971	0.366	0.234	-0.319
CPU2	0.067	0.897	0.376	0.144	-0.288
CPU3	0.127	0.899	0.416	0.120	-0.233
RC1	0.146	0.365	0.916	0.124	-0.213
RC2	0.022	0.357	0.889	0.160	-0.239
RC3	0.061	0.411	0.938	0.134	-0.154
RC4	0.151	0.430	1.005	0.133	-0.152
IC1	0.053	-0.305	-0.200	0.112	1.000
LBR1	0.050	0.182	0.147	1.000	0.112

Table 5: Loadings and Cross Loadings of the Items for the Model SalesD-Stronger-Customer

Item	SalesD	CPU	RC	IC	LBR
SalesD1	1.000	0.001	0.105	0.224	-0.216
CPU1	0.088	0.859	0.345	0.212	0.002
CPU2	0.011	0.992	0.415	0.215	0.005
CPU3	-0.093	0.901	0.377	0.177	0.107
RC1	0.083	0.320	0.745	0.048	0.045
RC2	0.132	0.309	0.784	0.108	-0.080
RC3	0.045	0.350	0.821	0.095	-0.056
RC4	0.109	0.452	1.105	0.088	-0.108
IC1	-0.216	0.041	-0.063	-0.118	1.000
LBR1	0.224	0.219	0.097	1.000	-0.118

Table 6: Loadings and Cross Loadings of the Items for the Model SalesD-Weaker-Provider

Item	SalesD	CPU	RC	IC	LBR
SalesD1	1.000	0.126	0.383	0.023	-0.289
CPU1	0.208	1.040	0.438	0.462	0.038
CPU2	0.039	0.856	0.428	0.321	0.154
CPU3	0.085	0.875	0.443	0.328	0.058
RC1	0.320	0.405	0.859	0.135	-0.148
RC2	0.356	0.452	0.956	0.187	-0.147
RC3	0.322	0.408	0.852	0.161	-0.071
RC4	0.402	0.453	0.996	0.276	-0.080
IC1	-0.289	0.086	-0.121	-0.267	1.000
LBR1	0.023	0.404	0.210	1.000	-0.267

Table 7: Loadings and Cross Loadings of the Items for the Model SalesD-Stronger-Provider

Item	SalesD	CPU	RC	IC	LBR
SalesD1	1.000	0.096	0.182	0.016	-0.143
CPU1	0.115	0.806	0.258	0.242	-0.074
CPU2	0.103	0.997	0.372	0.250	-0.081
CPU3	0.046	0.916	0.325	0.268	-0.072
RC1	0.121	0.262	0.843	0.200	0.184
RC2	0.216	0.269	0.783	0.180	-0.007
RC3	0.154	0.252	0.731	0.188	0.039
RC4	0.164	0.435	1.129	0.138	0.135
IC1	-0.143	-0.083	0.106	0.181	1.000
LBR1	0.016	0.278	0.192	1.000	0.181

Table 8: Loadings and Cross Loadings of the Items for the Model *ServiceD-Weaker-Customer*

Item	ServiceD	CPU	RC	IC	LBR
ServiceD1	1.000	0.129	0.215	-0.051	0.170
CPU1	0.048	0.944	0.365	0.234	-0.319
CPU2	0.079	0.889	0.376	0.144	-0.288
CPU3	0.228	0.934	0.416	0.120	-0.233
RC1	0.234	0.365	0.942	0.124	-0.213
RC2	0.134	0.358	0.876	0.160	-0.239
RC3	0.189	0.412	0.927	0.134	-0.154
RC4	0.243	0.431	1.002	0.133	-0.152
IC1	0.170	-0.304	-0.200	0.112	1.000
LBR1	-0.051	0.180	0.146	1.000	0.112

Table 9: Loadings and Cross Loadings of the Items for the Model *ServiceD-Stronger-Customer*

Item	ServiceD	CPU	RC	IC	LBR
ServiceD1	1.000	-0.142	-0.059	0.112	-0.160
CPU1	-0.126	0.861	0.345	0.212	0.002
CPU2	-0.102	0.968	0.415	0.215	0.005
CPU3	-0.164	0.923	0.377	0.177	0.107
RC1	-0.148	0.320	0.737	0.048	0.045
RC2	-0.047	0.310	0.765	0.108	-0.080
RC3	-0.047	0.350	0.847	0.095	-0.056
RC4	0.004	0.452	1.104	0.088	-0.108
IC1	-0.160	0.042	-0.064	-0.118	1.000
LBR1	0.112	0.219	0.097	1.000	-0.118

Table 10: Loadings and Cross Loadings of the Items for the Model *ServiceD-Weaker-Provider*

Item	ServiceD	CPU	RC	IC	LBR
ServiceD1	1.000	0.164	0.594	0.189	-0.277
CPU1	0.201	1.027	0.437	0.462	0.038
CPU2	0.119	0.869	0.428	0.321	0.154
CPU3	0.129	0.876	0.442	0.328	0.058
RC1	0.528	0.405	0.887	0.135	-0.148
RC2	0.591	0.452	0.988	0.187	-0.147
RC3	0.518	0.408	0.872	0.161	-0.071
RC4	0.545	0.453	0.924	0.276	-0.080
IC1	-0.277	0.087	-0.122	-0.267	1.000
LBR1	0.189	0.404	0.207	1.000	-0.267

Table 11: Loadings and Cross Loadings of the Items for the Model *ServiceD-Stronger-Provider*

Item	ServiceD	CPU	RC	IC	LBR
ServiceD1	1.000	0.074	0.128	0.055	0.073
CPU1	0.083	0.797	0.258	0.242	-0.074
CPU2	0.061	0.988	0.371	0.250	-0.081
CPU3	0.061	0.933	0.326	0.268	-0.072
RC1	0.098	0.262	0.852	0.200	0.184
RC2	0.104	0.269	0.717	0.180	-0.007
RC3	0.086	0.252	0.709	0.188	0.039
RC4	0.156	0.435	1.183	0.138	0.135
IC1	0.073	-0.083	0.108	0.181	1.000
LBR1	0.055	0.278	0.190	1.000	0.181

Table 12: Indices of Assessment of Internal Consistency Reliability for the Model *SalesD-Weaker-Customer*

Construct	AVE	Cr. α	CR	ρ_A
Sales Digitalization (SalesD)	1.000	1.000	1.000	1.000
Coercive Power Use (CPU)	0.852	0.945	0.945	0.947
Relational Conflict (RC)	0.880	0.967	0.967	0.969
Investment Cost (IC)	1.000	1.000	1.000	1.000
Length of Business Relationship (LBR)	1.000	1.000	1.000	1.000

Table 13: Indices of Assessment of Internal Consistency Reliability for the Model *SalesD-Stronger-Customer*

Construct	AVE	Cr. α	CR	ρ_A
Sales Digitalization (SalesD)	1.000	1.000	1.000	1.000
Coercive Power Use (CPU)	0.844	0.940	0.942	0.946
Relational Conflict (RC)	0.766	0.930	0.927	0.956
Investment Cost (IC)	1.000	1.000	1.000	1.000
Length of Business Relationship (LBR)	1.000	1.000	1.000	1.000

Table 14: Indices of Assessment of Internal Consistency Reliability for the Model SalesD-Weaker-Provider

Construct	AVE	Cr. α	CR	ρ_A
Sales Digitalization (SalesD)	1.000	1.000	1.000	1.000
Coercive Power Use (CPU)	0.860	0.948	0.948	0.959
Relational Conflict (RC)	0.842	0.956	0.955	0.959
Investment Cost (IC)	1.000	1.000	1.000	1.000
Length of Business Relationship (LBR)	1.000	1.000	1.000	1.000

Table 15: Indices of Assessment of Internal Consistency Reliability for the Model SalesD-Stronger-Provider

Construct	AVE	Cr. α	CR	ρ_A
Sales Digitalization (SalesD)	1.000	1.000	1.000	1.000
Coercive Power Use (CPU)	0.827	0.933	0.934	0.943
Relational Conflict (RC)	0.783	0.935	0.933	0.966
Investment Cost (IC)	1.000	1.000	1.000	1.000
Length of Business Relationship (LBR)	1.000	1.000	1.000	1.000

Table 16: Indices of Assessment of Internal Consistency Reliability for the Model ServiceD-Weaker-Customer

Construct	AVE	Cr. α	CR	ρ_A
Service Digitalization (ServiceD)	1.000	1.000	1.000	1.000
Coercive Power Use (CPU)	0.851	0.945	0.945	0.946
Relational Conflict (RC)	0.880	0.967	0.967	0.969
Investment Cost (IC)	1.000	1.000	1.000	1.000
Length of Business Relationship (LBR)	1.000	1.000	1.000	1.000

Table 17: Indices of Assessment of Internal Consistency Reliability for the Model ServiceD-Stronger-Customer

Construct	AVE	Cr. α	CR	ρ_A
Service Digitalization (ServiceD)	1.000	1.000	1.000	1.000
Coercive Power Use (CPU)	0.843	0.940	0.941	0.944
Relational Conflict (RC)	0.766	0.930	0.927	0.957
Investment Cost (IC)	1.000	1.000	1.000	1.000
Length of Business Relationship (LBR)	1.000	1.000	1.000	1.000

Table 18: Indices of Assessment of Internal Consistency Reliability for the Model *ServiceD-Weaker-Provider*

Construct	AVE	Cr. α	CR	ρ_A
Service Digitalization (ServiceD)	1.000	1.000	1.000	1.000
Coercive Power Use (CPU)	0.859	0.948	0.948	0.956
Relational Conflict (RC)	0.844	0.956	0.956	0.958
Investment Cost (IC)	1.000	1.000	1.000	1.000
Length of Business Relationship (LBR)	1.000	1.000	1.000	1.000

Table 19: Indices of Assessment of Internal Consistency Reliability for the Model *ServiceD-Stronger-Provider*

Construct	AVE	Cr. α	CR	ρ_A
Service Digitalization (ServiceD)	1.000	1.000	1.000	1.000
Coercive Power Use (CPU)	0.827	0.933	0.934	0.944
Relational Conflict (RC)	0.785	0.935	0.933	0.986
Investment Cost (IC)	1.000	1.000	1.000	1.000
Length of Business Relationship (LBR)	1.000	1.000	1.000	1.000

Table 20: Correlations between Constructs and Square Root of the AVEs on the Diagonal for the Model *SalesD-Weaker-Customer*

Construct	SalesD	CPU	RC	IC	LBR
Sales Digitalization (SalesD)	1.000				
Coercive Power Use (CPU)	0.098	0.923			
Relational Conflict (RC)	0.103	0.417	0.938		
Investment Cost (IC)	0.050	0.182	0.147	1.000	
Length of Business Relationship (LBR)	0.053	-0.305	-0.200	0.112	1.000

Table 21: Correlations between Constructs and Square Root of the AVEs on the Diagonal for the Model *SalesD-Stronger-Customer*

Construct	SalesD	CPU	RC	IC	LBR
Sales Digitalization (SalesD)	1.000				
Coercive Power Use (CPU)	0.001	0.919			
Relational Conflict (RC)	0.105	0.414	0.875		
Investment Cost (IC)	0.224	0.219	0.097	1.000	
Length of Business Relationship (LBR)	-0.216	0.041	-0.063	-0.118	1.000

Table 22: Correlations between Constructs and Square Root of the AVEs on the Diagonal for the Model SalesD-Weaker-Provider

Construct	SalesD	CPU	RC	IC	LBR
Sales Digitalization (SalesD)	1.000				
Coercive Power Use (CPU)	0.126	0.927			
Relational Conflict (RC)	0.383	0.469	0.918		
Investment Cost (IC)	0.023	0.404	0.210	1.000	
Length of Business Relationship (LBR)	-0.289	0.086	-0.121	-0.267	1.000

Table 23: Correlations between Constructs and Square Root of the AVEs on the Diagonal for the Model SalesD-Stronger-Provider

Construct	SalesD	CPU	RC	IC	LBR
Sales Digitalization (SalesD)	1.000				
Coercive Power Use (CPU)	0.096	0.910			
Relational Conflict (RC)	0.182	0.353	0.885		
Investment Cost (IC)	0.016	0.278	0.192	1.000	
Length of Business Relationship (LBR)	-0.143	-0.083	0.106	0.181	1.000

Table 24: Correlations between Constructs and Square Root of the AVEs on the Diagonal for the Model ServiceD-Weaker-Customer

Construct	ServiceD	CPU	RC	IC	LBR
Service Digitalization (ServiceD)	1.000				
Coercive Power Use (CPU)	0.129	0.923			
Relational Conflict (RC)	0.215	0.418	0.938		
Investment Cost (IC)	-0.051	0.180	0.146	1.000	
Length of Business Relationship (LBR)	0.170	-0.304	-0.200	0.112	1.000

Table 25: Correlations between Constructs and Square Root of the AVEs on the Diagonal for the Model ServiceD-Stronger-Customer

Construct	ServiceD	CPU	RC	IC	LBR
Service Digitalization (ServiceD)	1.000				
Coercive Power Use (CPU)	-0.142	0.918			
Relational Conflict (RC)	-0.059	0.414	0.875		
Investment Cost (IC)	0.112	0.219	0.097	1.000	
Length of Business Relationship (LBR)	-0.160	0.042	-0.064	-0.118	1.000

Table 26: Correlations between Constructs and Square Root of the AVEs on the Diagonal for the Model *ServiceD-Weaker-Provider*

Construct	ServiceD	CPU	RC	IC	LBR
Service Digitalization (ServiceD)	1.000				
Coercive Power Use (CPU)	0.164	0.927			
Relational Conflict (RC)	0.594	0.468	0.919		
Investment Cost (IC)	0.189	0.404	0.207	1.000	
Length of Business Relationship (LBR)	-0.277	0.087	-0.122	-0.267	1.000

Table 27: Correlations between Constructs and Square Root of the AVEs on the Diagonal for the Model *ServiceD-Stronger-Provider*

Construct	ServiceD	CPU	RC	IC	LBR
Service Digitalization (ServiceD)	1.000				
Coercive Power Use (CPU)	0.074	0.910			
Relational Conflict (RC)	0.128	0.353	0.886		
Investment Cost (IC)	0.055	0.278	0.190	1.000	
Length of Business Relationship (LBR)	0.073	-0.083	0.108	0.181	1.000

Table 28: Correlations between Constructs and Square Root of the AVEs on the Diagonal for the Model *SalesD-Stronger-Customer*

Construct	ServiceD	CPU	RC	IC	LBR
Service Digitalization (ServiceD)	1.000				
Coercive Power Use (CPU)	0.164	0.927			
Relational Conflict (RC)	0.594	0.468	0.919		
Investment Cost (IC)	0.189	0.404	0.207	1.000	
Length of Business Relationship (LBR)	-0.277	0.087	-0.122	-0.267	1.000

Table 29: Heterotrait-Monotrait Ratio (HTMT) of the Constructs for the Model SalesD-Weaker-Customer

Construct	SalesD	CPU	RC	IC	LBR
Sales Digitalization (SalesD)					
Coercive Power Use (CPU)	0.098				
Relational Conflict (RC)	0.101	0.417			
Investment Cost (IC)	0.050	0.180	0.147		
Length of Business Relationship (LBR)	0.053	0.304	0.202	0.112	

Table 30: Heterotrait-Monotrait Ratio (HTMT) of the Constructs for the Model SalesD-Stronger-Customer

Construct	SalesD	CPU	RC	IC	LBR
Sales Digitalization (SalesD)					
Coercive Power Use (CPU)	0.069				
Relational Conflict (RC)	0.105	0.408			
Investment Cost (IC)	0.224	0.220	0.097		
Length of Business Relationship (LBR)	0.216	0.042	0.083	0.118	

Table 31: Heterotrait-Monotrait Ratio (HTMT) of the Constructs for the Model SalesD-Weaker-Provider

Construct	SalesD	CPU	RC	IC	LBR
Sales Digitalization (SalesD)					
Coercive Power Use (CPU)	0.119				
Relational Conflict (RC)	0.381	0.469			
Investment Cost (IC)	0.023	0.399	0.207		
Length of Business Relationship (LBR)	0.289	0.090	0.121	0.267	

Table 32: Heterotrait-Monotrait Ratio (HTMT) of the Constructs for the Model SalesD-Stronger-Provider

Construct	SalesD	CPU	RC	IC	LBR
Sales Digitalization (SalesD)					
Coercive Power Use (CPU)	0.097				
Relational Conflict (RC)	0.185	0.342			
Investment Cost (IC)	0.016	0.280	0.199		
Length of Business Relationship (LBR)	0.143	0.083	0.103	0.181	

Table 33: Heterotrait-Monotrait Ratio (HTMT) of the Constructs for the Model *ServiceD-Weaker-Customer*

Construct	ServiceD	CPU	RC	IC	LBR
Service Digitalization (ServiceD)					
Coercive Power Use (CPU)	0.128				
Relational Conflict (RC)	0.214	0.417			
Investment Cost (IC)	0.051	0.180	0.147		
Length of Business Relationship (LBR)	0.170	0.304	0.202	0.112	

Table 34: Heterotrait-Monotrait Ratio (HTMT) of the Constructs for the Model *ServiceD-Stronger-Customer*

Construct	ServiceD	CPU	RC	IC	LBR
Service Digitalization (ServiceD)					
Coercive Power Use (CPU)	0.143				
Relational Conflict (RC)	0.070	0.408			
Investment Cost (IC)	0.112	0.220	0.097		
Length of Business Relationship (LBR)	0.160	0.042	0.083	0.118	

Table 35: Heterotrait-Monotrait Ratio (HTMT) of the Constructs for the Model *ServiceD-Weaker-Provider*

Construct	ServiceD	CPU	RC	IC	LBR
Service Digitalization (ServiceD)					
Coercive Power Use (CPU)	0.161				
Relational Conflict (RC)	0.593	0.469			
Investment Cost (IC)	0.189	0.399	0.207		
Length of Business Relationship (LBR)	0.277	0.090	0.121	0.267	

Table 36: Heterotrait-Monotrait Ratio (HTMT) of the Constructs for the Model *ServiceD-Stronger-Provider*

Construct	ServiceD	CPU	RC	IC	LBR
Service Digitalization (ServiceD)					
Coercive Power Use (CPU)	0.075				
Relational Conflict (RC)	0.125	0.342			
Investment Cost (IC)	0.055	0.280	0.199		
Length of Business Relationship (LBR)	0.073	0.083	0.103	0.181	

Table 37: Standardized Root Mean Square Residuals (SRMR) for all Models

Model	SalesD	ServiceD
Weaker-Customer	.034	.036
Stronger-Customer	.067	.066
Weaker-Provider	.054	.045
Stronger-Provider	.066	.075

Table 38: Inner VIF Values of the Constructs for the Sales Digitalization (*SalesD*-*) Models

Construct	SalesD-Stronger-Customer	SalesD-Weaker-Customer	SalesD-Stronger-Provider	SalesD-Weaker-Provider
Sales Digitalization (SalesD)	1.122	1.165	1.033	1.154
Coercive Power Use (CPU)	1.062	1.178	1.114	1.332
Investment Cost (IC)	1.117	1.083	1.151	1.496
Length of Business Relationship (LBR)	1.058	1.159	1.146	1.304

Table 39: Inner VIF Values of the Constructs for the Service Digitalization (*ServiceD*-*) Models

Construct	ServiceD-Stronger-Customer	ServiceD-Weaker-Customer	ServiceD-Stronger-Provider	ServiceD-Weaker-Provider
Service Digitalization (ServiceD)	1.065	1.289	1.018	1.148
Coercive Power Use (CPU)	1.357	1.247	1.157	1.356
Investment Cost (IC)	1.089	1.136	1.153	1.368
Length of Business Relationship (LBR)	1.088	1.258	1.062	1.327

Table 40: Path Coefficients (PC), p-values (PV), and 95% Confidence Intervals (Lower Quantile (LQ): 2.5%; Upper Quantile (UQ): 97.5%) for Models SalesD*-Customer

Construct	SalesD-Stronger-Customer				SalesD-Weaker-Customer			
	PC	PV	LQ	UQ	PC	PV	LQ	UQ
Coercive Power Use (CPU)	.421	.000	.232	.631	.362	.000	.200	.514
Moderating Effect (SalesD x CPU)	.007	.917	.003	.232	.171	.044	.020	.348
Sales Digitalization (SalesD)	.096	.243	.005	.301	.130	.134	.007	.327
Investment Cost (IC)	-.025	.768	-.315	-.004	.070	.277	.004	.236
Length of Business Relationship (LBR)	-.063	.456	-.312	-.006	-.086	.153	-.224	-.005

Table 41: Path Coefficients (PC), p-values (PV), and 95% Confidence Intervals (Lower Quantile (LQ): 2.5%; Upper Quantile (UQ): 97.5%) for Models SalesD*-Provider

Construct	SalesD-Stronger-Provider				SalesD-Weaker-Provider			
	PC	PV	LQ	UQ	PC	PV	LQ	UQ
Coercive Power Use (CPU)	.329	.001	.125	.519	.441	.005	.102	.727
Moderating Effect (SalesD x CPU)	.005	.943	.004	.276	.088	.458	.006	.438
Sales Digitalization (SalesD)	.170	.056	.017	.350	.302	.024	.046	.568
Investment Cost (IC)	.071	.379	.004	.304	.036	.734	.005	.396
Length of Business Relationship (LBR)	.145	.118	.011	.359	-.053	.543	-.317	-.005

Table 42: Path Coefficient (PC), p-values (PV), and 95% Confidence Intervals (Lower Quantile (LQ): 2.5%; Upper Quantile (UQ): 97.5%) for Models ServiceD*-Customer

Construct	ServiceD-Stronger-Customer				ServiceD-Weaker-Customer			
	PC	PV	LQ	UQ	PC	PV	LQ	UQ
Coercive Power Use (CPU)	.396	.003	.113	.645	.358	.000	.200	.513
Moderating Effect (ServiceD x CPU)	.039	.646	.004	.319	.207	.023	.028	.388
Service Digitalization (ServiceD)	-.011	.891	-.312	-.004	.288	.007	.073	.489
Investment Cost (IC)	-.001	.988	-.319	-.004	.072	.251	.004	.236
Length of Business Relationship (LBR)	-.075	.410	-.338	-.006	-.107	.097	-.248	-.007

Table 43: Path Coefficient (PC), p-values (PV), and 95% Confidence Intervals (Lower Quantile (LQ): 2.5%; Upper Quantile (UQ): 97.5%) for Models ServiceD-*Provider

Construct	ServiceD-Stronger-Provider				ServiceD-Weaker-Provider			
	PC	PV	LQ	UQ	PC	PV	LQ	UQ
Coercive Power Use (CPU)	.341	.001	.141	.550	.469	.003	.119	.749
Moderating Effect (ServiceD x CPU)	-.019	.782	-.250	-.003	.243	.026	.025	.441
Service Digitalization (ServiceD)	.092	.198	.006	.265	.564	.000	.321	.764
Investment Cost (IC)	.072	.374	.004	.298	-.031	.760	-.371	-.005
Length of Business Relationship (LBR)	.116	.158	.007	.312	.047	.503	.003	.261

Table 44: R² and corresponding Power values for all Models

Model	R ²	Power
SalesD-Stronger-Customer	.182	88%
SalesD-Weaker-Customer	.209	99%
SalesD-Stronger-Provider	.147	95%
SalesD-Weaker-Provider	.333	95%
ServiceD-Stronger-Customer	.174	86%
ServiceD-Weaker-Customer	.245	100%
ServiceD-Stronger-Provider	.135	93%
ServiceD-Weaker-Provider	.548	100%

Table 45: Path Coefficient (PC) and p-values (PV) for the Supplemental Analysis including a Path from Sales Digitalization to Coercive Power Use for the Models SalesD-*

Path	SalesD-Stronger-Customer		SalesD-Weaker-Customer		SalesD-Stronger-Provider		SalesD-Weaker-Provider	
	PC	PV	PC	PV	PC	PV	PC	PV
CPU → RC	.421	.000	.362	.000	.329	.001	.441	.005
SalesD x CPU → RC	.007	.916	.171	.047	.005	.943	.088	.452
SalesD → CPU	.001	.990	.098	.251	.096	.212	.126	.236
SalesD → RC	.096	.244	.130	.135	.170	.061	.302	.025
IC → RC	-.025	.767	.070	.272	.071	.368	.036	.742
LBR → RC	-.063	.504	-.086	.157	.145	.112	-.053	.553

Table 46: Path Coefficient (PC) and *p*-values (PV) for the Supplemental Analysis including a Path from Sales Digitalization to Coercive Power Use for the Models *ServiceD*-*

Path	ServiceD-Stronger-Customer		ServiceD-Weaker-Customer		ServiceD-Stronger-Provider		ServiceD-Weaker-Provider	
	PC	PV	PC	PV	PC	PV	PC	PV
CPU → RC	.396	.003	.358	.000	.341	.001	.469	.004
<i>ServiceD</i> x CPU → RC	.039	.646	.207	.026	-.019	.782	.243	.032
<i>ServiceD</i> → CPU	-.142	.194	.129	.179	.074	.328	.164	.180
<i>ServiceD</i> → RC	-.011	.888	.288	.007	.092	.196	.564	.000
IC → RC	-.001	.987	.072	.244	.072	.364	-.031	.767
LBR → RC	-.075	.415	-.107	.093	.116	.154	.047	.513

Table 47: Path Coefficient (PC) and *p*-values (PV) for the Supplemental Analysis including a Path from Coercive Power Use to Sales Digitalization for the Models *SalesD*-*

Path	SalesD-Stronger-Customer		SalesD-Weaker-Customer		SalesD-Stronger-Provider		SalesD-Weaker-Provider	
	PC	PV	PC	PV	PC	PV	PC	PV
CPU → RC	.421	.000	.362	.000	.329	.001	.441	.005
CPU → <i>SalesD</i>	.001	.990	.098	.253	.096	.207	.126	.239
<i>SalesD</i> x CPU → RC	.007	.916	.171	.049	.005	.945	.088	.436
<i>SalesD</i> → RC	.096	.244	.130	.135	.170	.062	.302	.024
IC → RC	-.025	.767	.070	.269	.071	.383	.036	.735
LBR → RC	-.063	.461	-.086	.159	.145	.113	-.053	.544

Table 48: Path Coefficient (PC) and *p*-values (PV) for the Supplemental Analysis including a Path from Coercive Power Use to Sales Digitalization for the Models *ServiceD*-*

Path	ServiceD-Stronger-Customer		ServiceD-Weaker-Customer		ServiceD-Stronger-Provider		ServiceD-Weaker-Provider	
	PC	PV	PC	PV	PC	PV	PC	PV
CPU → RC	.396	.003	.358	.000	.341	.001	.469	.006
CPU → <i>ServiceD</i>	-.142	.196	.129	.181	.074	.323	.164	.186
<i>ServiceD</i> x CPU → RC	.039	.639	.207	.028	-.019	.781	.243	.043
<i>ServiceD</i> → RC	-.011	.886	.288	.008	.092	.198	.564	.000
IC → RC	-.001	.988	.072	.245	.072	.368	-.031	.778
LBR → RC	-.075	.418	-.107	.098	.116	.145	.047	.509

References

- Ambrose, M. L. (2002). Contemporary Justice Research: A New Look at Familiar Questions. *Organizational Behavior and Human Decision Processes*, 89(1), 803-812. doi:10.1016/S0749-5978(02)00030-4
- Bagozzi, R. P., & Yi, Y. (2012). Specification, Evaluation, and Interpretation of Structural Equation Models. *Journal of the Academy of Marketing Science*, 40(1), 8-34. doi:10.1007/s11747-011-0278-x
- Bagozzi, R. P., Yi, Y., & Phillips, L. W. (1991). Assessing Construct Validity in Organizational Research. *Administrative Science Quarterly*, 36(3), 421-458. doi:10.2307/2393203
- Baird, A., & Raghu, T. S. (2015). Associating Consumer Perceived Value with Business Models for Digital Services. *European Journal of Information Systems*, 24(1), 4-22. doi:10.1057/ejis.2013.12
- Benaroch, M., Lichtenstein, Y., & Robinson, K. (2006). Real Options in Information Technology Risk Management: An Empirical Validation of Risk-Option Relationships. *MIS Quarterly*, 30(4), 827-864. doi:10.2307/25148756
- Böhmman, T., Junginger, M., & Krmar, H. (2003, 6-9 Jan. 2003). *Modular Service Architectures: A Concept and Method for Engineering It Services*. Paper presented at the 36th Annual Hawaii International Conference on System Sciences.
- Bollen, K., Ittner, H., & C. Euwema, M. (2012). Mediating Hierarchical Labor Conflicts: Procedural Justice Makes a Difference—for Subordinates. *Group Decision and Negotiation*, 21(5), 621-636. doi:10.1007/s10726-011-9230-1
- Brown, J. R., Cobb, A. T., & Lusch, R. F. (2006). The Roles Played by Interorganizational Contracts and Justice in Marketing Channel Relationships. *Journal of Business Research*, 59(2), 166-175. doi:10.1016/j.jbusres.2005.04.004
- Cohen, J. (1992). A Power Primer. *Psychological Bulletin*, 112(1), 155-159. doi:10.1037/0033-2909.112.1.155
- Dijkstra, T. K., & Henseler, J. (2015a). Consistent and Asymptotically Normal Pls Estimators for Linear Structural Equations. *Computational Statistics & Data Analysis*, 81, 10-23. doi:10.1016/j.csda.2014.07.008
- Dijkstra, T. K., & Henseler, J. (2015b). Consistent Partial Least Squares Path Modeling. *MIS Quarterly*, 39(2), 297-316. doi:10.25300/misq/2015/39.2.02
- Emerson, R. M. (1962). Power-Dependence Relations. *American Sociological Review*, 27(1), 31-41. doi:10.2307/2089716
- Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39-50. doi:10.2307/3151312
- Frazier, G. L. (1999). Organizing and Managing Channels of Distribution. *Journal of the Academy of Marketing Science*, 27(2), 226-240. doi:10.1177/0092070399272007
- Frazier, G. L., & Rody, R. C. (1991). The Use of Influence Strategies in Interfirm Relationships in Industrial Product Channels. *Journal of Marketing*, 55(1), 52-69. doi:10.1177/002224299105500105
- Froehle, C. M., & Roth, A. V. (2004). New Measurement Scales for Evaluating Perceptions of the Technology-Mediated Customer Service Experience. *Journal of Operations Management*, 22(1), 1-21. doi:10.1016/j.jom.2003.12.004
- Fürst, A., Leimbach, M., & Prigge, J.-K. (2017). Organizational Multichannel Differentiation: An Analysis of Its Impact on Channel Relationships and Company Sales Success. *Journal of Marketing*, 81(1), 59-82. doi:10.1509/jm.14.0138
- Gaski, J. F. (1984). The Theory of Power and Conflict in Channels of Distribution. *Journal of Marketing*, 48(3), 9-29. doi:10.1177/002224298404800303
- Gaski, J. F., & Nevin, J. R. (1985). The Differential Effects of Exercised and Unexercised Power Sources in a Marketing Channel. *Journal of Marketing Research*, 22(2), 130-142. doi:10.2307/3151359

- Geyskens, I., Steenkamp, J.-B. E. M., & Kumar, N. (1999). A Meta-Analysis of Satisfaction in Marketing Channel Relationships. *Journal of Marketing Research*, 36(2), 223-238. doi:10.2307/3152095
- Gorla, N., Chiravuri, A., & Chinta, R. (2017). Business-to-Business E-Commerce Adoption: An Empirical Investigation of Business Factors. *Information Systems Frontiers*, 19(3), 645-667. doi:10.1007/s10796-015-9616-8
- Griffith, D. A., Hoppner, J. J., Lee, H. S., & Schoenherr, T. (2017). The Influence of the Structure of Interdependence on the Response to Inequity in Buyer-Supplier Relationships. *Journal of Marketing Research*, 54(1), 124-137. doi:10.1509/jmr.13.0319
- Gulati, R., & Sytch, M. (2007). Dependence Asymmetry and Joint Dependence in Interorganizational Relationships: Effects of Embeddedness on a Manufacturer's Performance in Procurement Relationships. *Administrative Science Quarterly*, 52(1), 32-69. doi:10.2189/asqu.52.1.32
- Guo, L., Lotz, S. L., Tang, C., & Gruen, T. W. (2016). The Role of Perceived Control in Customer Value Cocreation and Service Recovery Evaluation. *Journal of Service Research*, 19(1), 39-56. doi:10.1177/1094670515597213
- Hair, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (Pls-Sem)*. Los Angeles: Sage Publications.
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). Pls-Sem: Indeed a Silver Bullet. *Journal of Marketing Theory and Practice*, 19(2), 139-152. doi:10.2753/MTP1069-6679190202
- Han, L., Rathindra, S., Jie, Z., & Xin, L. (2014). Exploring the Effects of Organizational Justice, Personal Ethics and Sanction on Internet Use Policy Compliance. *Information Systems Journal*, 24(6), 479-502. doi:10.1111/isj.12037
- Heide, J. B., & Miner, A. S. (1992). The Shadow of the Future: Effects of Anticipated Interaction and Frequency of Contact on Buyer-Seller Cooperation. *Academy of Management Journal*, 35(2), 265-291. doi:10.2307/256374
- Henseler, J., & Chin, W. W. (2010). A Comparison of Approaches for the Analysis of Interaction Effects between Latent Variables Using Partial Least Squares Path Modeling. *Structural Equation Modeling: A Multidisciplinary Journal*, 17(1), 82-109. doi:10.1080/10705510903439003
- Henseler, J., & Fassott, G. (2010). Testing Moderating Effects in Pls Path Models: An Illustration of Available Procedures *Handbook of Partial Least Squares* (pp. 713-735): Springer.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A New Criterion for Assessing Discriminant Validity in Variance-Based Structural Equation Modeling. *Journal of the Academy of Marketing Science*, 43(1), 115-135. doi:10.1007/s11747-014-0403-8
- Homburg, C., Wieseke, J., & Hoyer, W. D. (2009). Social Identity and the Service-Profit Chain. *Journal of Marketing*, 73(2), 38-54. doi:10.1509/jmkg.73.2.38
- Hu, L.-t., & Bentler, P. M. (1998). Fit Indices in Covariance Structure Modeling: Sensitivity to Underparameterized Model Misspecification. *Psychological Methods*, 3(4), 424-453. doi:10.1037/1082-989X.3.4.424
- Hunt, S. D., & Nevin, J. R. (1974). Power in a Channel of Distribution: Sources and Consequences. *Journal of Marketing Research*, 11(2), 186-193. doi:10.2307/3150557
- Hunton, J. E., & Beeler, J. D. (1997). Effects of User Participation in Systems Development: A Longitudinal Field Experiment. *MIS Quarterly*, 21(4), 359-388. doi:10.2307/249719
- Hunton, J. E., & Price, K. H. (1997). Effects of the User Participation Process and Task Meaningfulness on Key Information System Outcomes. *Management Science*, 43(6), 797-812. doi:10.1287/mnsc.43.6.797
- Jason, B. T., & Perrewé, P. L. (2002). An Empirical Examination of Individual Traits as Antecedents to Computer Anxiety and Computer Self-Efficacy. *MIS Quarterly*, 26(4), 381-396. doi:10.2307/4132314
- Kelly, S., & Scott, D. (2012). Relationship Benefits: Conceptualization and Measurement in a Business-to-Business Environment. *International Small Business Journal*, 30(3), 310-339. doi:10.1177/0266242610381297
- Kenny, D. A. (2015). Moderator Variables. Retrieved from <http://davidakenny.net/cm/moderation.htm>
- Koch, H., & Schultze, U. (2011). Stuck in the Conflicted Middle: A Role-Theoretic Perspective on B2b E-Marketplaces. *MIS Quarterly*, 35(1), 123-146. doi:10.2307/23043492

- Kock, N. (2015). Common Method Bias in Pls-Sem: A Full Collinearity Assessment Approach. *International Journal of e-Collaboration (IJeC)*, 11(4), 1-10. doi:10.4018/ijec.2015100101
- Kumar, N., Scheer, L. K., & Steenkamp, J.-B. E. M. (1995). The Effects of Perceived Interdependence on Dealer Attitudes. *Journal of Marketing Research*, 32(3), 348-356.
- Langer, N., Forman, C., Kekre, S., & Sun, B. (2012). Ushering Buyers into Electronic Channels: An Empirical Analysis. *Information Systems Research*, 23(4), 1212-1231. doi:10.1287/isre.1110.0410
- Lässig, R., Leutiger, P., Fey, A., Hentschel, S., Tornier, S., & Hirt, F. (2015). The Digital Future of B2b Sales. Retrieved from
- Lee, C.-J., & Johnsen, R. E. (2012). Asymmetric Customer-Supplier Relationship Development in Taiwanese Electronics Firms. *Industrial Marketing Management*, 41(4), 692-705. doi:10.1016/j.indmarman.2011.09.017
- Lewis, M. O., Mathiassen, L., & Rai, A. (2011). Scalable Growth in It-Enabled Service Provisioning: A Sensemaking Perspective. *European Journal of Information Systems*, 20(3), 285-302. doi:10.1057/ejis.2011.5
- Lumineau, F., & Malhotra, D. (2011). Shadow of the Contract: How Contract Structure Shapes Interfirm Dispute Resolution. *Strategic Management Journal*, 32(5), 532-555. doi:10.1002/smj.890
- Lusch, R. F. (1976). Sources of Power: Their Impact on Intrachannel Conflict. *Journal of Marketing Research*, 13(4), 382-390. doi:10.2307/3151021
- MacKenzie, S. B., Podsakoff, P. M., & Podsakoff, N. P. (2011). Construct Measurement and Validation Procedures in Mis and Behavioral Research: Integrating New and Existing Techniques. *MIS Quarterly*, 35(2), 293-334. doi:10.2307/23044045
- Mallapragada, G., Grewal, R., Mehta, R., & Dharwadkar, R. (2015). Virtual Interorganizational Relationships in Business-to-Business Electronic Markets: Heterogeneity in the Effects of Organizational Interdependence on Relational Outcomes. *Journal of the Academy of Marketing Science*, 43(5), 610-628. doi:10.1007/s11747-014-0411-8
- McKinsey. (2018). Solutions. Retrieved from <https://www.mckinsey.com/solutions>
- Mitchell, V. L. (2006). Knowledge Integration and Information Technology Project Performance. *MIS Quarterly*, 30(4), 919-939. doi:10.2307/25148759
- Morgan, R., Doran, D., & Morgan, S. J. (2018). Strong Contracts: The Relationship between Power and Action. *International Journal of Operations & Production Management*, 38(1), 272-294. doi:10.1108/IJOPM-02-2016-0064
- Murphy, M., & Sashi, C. M. (2018). Communication, Interactivity, and Satisfaction in B2b Relationships. *Industrial Marketing Management*, 68, 1-12. doi:10.1016/j.indmarman.2017.08.020
- Nambisan, S., Lyytinen, K., Majchrzak, A., & Song, M. (2017). Digital Innovation Management: Reinventing Innovation Management Research in a Digital World. *MIS Quarterly*, 41(1), 223-238. doi:10.25300/MISQ/2017/41:1.03
- Palmatier, R. W., Dant, R. P., & Grewal, D. (2007). A Comparative Longitudinal Analysis of Theoretical Perspectives of Interorganizational Relationship Performance. *Journal of Marketing*, 71(4), 172-194. doi:10.1509/jmkg.71.4.172
- Paluch, S., & Wunderlich, N. V. (2016). Contrasting Risk Perceptions of Technology-Based Service Innovations in Inter-Organizational Settings. *Journal of Business Research*, 69(7), 2424-2431. doi:10.1016/j.jbusres.2016.01.012
- Pavlou, P. A., Liang, H., & Xue, Y. (2007). Understanding and Mitigating Uncertainty in Online Exchange Relationships: A Principal-Agent Perspective. *MIS Quarterly*, 31(1), 105-136. doi:10.2307/25148783
- Phillips, J. M. (2002). Antecedents and Consequences of Procedural Justice Perceptions in Hierarchical Decision-Making Teams. *Small Group Research*, 33(1), 32-64. doi:10.1177/104649640203300102
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies. *Journal of Applied Psychology*, 88(5), 879-903. doi:10.1037/0021-9010.88.5.879

- Rindt, J., & Mouzas, S. (2015). Exercising Power in Asymmetric Relationships: The Use of Private Rules. *Industrial Marketing Management*, 48, 202-213. doi:10.1016/j.indmarman.2015.03.018
- Ringle, C. M., Wende, S., & Becker, J.-M. (2015). Smartpls 3: SmartPLS GmbH.
- Sambamurthy, V., & Zmud, R. W. (1999). Arrangements for Information Technology Governance: A Theory of Multiple Contingencies. *MIS Quarterly*, 23(2), 261-290. doi:10.2307/249754
- Sarstedt, M., Hair, J. F., Ringle, C. M., Thiele, K. O., & Gudergan, S. P. (2016). Estimation Issues with Pls and Cbsem: Where the Bias Lies! *Journal of Business Research*, 69(10), 3998-4010. doi:10.1016/j.jbusres.2016.06.007
- Scherer, A., Wunderlich, N. V., & von Wangenheim, F. (2015). The Value of Self-Service: Long-Term Effects of Technology-Based Self-Service Usage on Customer Retention. *MIS Quarterly*, 39(1), 177-200. doi:10.25300/MISQ/2015/39.1.08
- Schmitz, T., Schweiger, B., & Daft, J. (2016). The Emergence of Dependence and Lock-in Effects in Buyer-Supplier Relationships — a Buyer Perspective. *Industrial Marketing Management*, 55, 22-34. doi:10.1016/j.indmarman.2016.02.010
- Sharma, S., Durand, R. M., & Gur-Arie, O. (1981). Identification and Analysis of Moderator Variables. *Journal of Marketing Research*, 18(3), 291-300. doi:10.2307/3150970
- Skinner, S. J., Gassenheimer, J. B., & Kelley, S. W. (1992). Cooperation in Supplier-Dealer Relations. *Journal of Retailing*, 68(2), 174-193.
- Son, J.-Y., & Kim, S. S. (2008). Internet Users' Information Privacy-Protective Responses: A Taxonomy and a Nomological Model. *MIS Quarterly*, 32(3), 503-529. doi:10.2307/25148854
- Thibaut, J. W., & Walker, L. (1975). *Procedural Justice: A Psychological Analysis*. L. Erlbaum Associates.
- Tiwana, A., & Kim, S. K. (2015). Discriminating It Governance. *Information Systems Research*, 26(4), 656-674. doi:10.1287/isre.2015.0591
- Turel, O., Yuan, Y., & Connelly, C. E. (2008). In Justice We Trust: Predicting User Acceptance of E-Customer Services. *Journal of Management Information Systems*, 24(4), 123-151. doi:10.2753/MIS0742-1222240405
- Van den Abbeele, A., Roodhooft, F., & Warlop, L. (2009). The Effect of Cost Information on Buyer-Supplier Negotiations in Different Power Settings. *Accounting, Organizations and Society*, 34(2), 245-266. doi:10.1016/j.aos.2008.05.005
- Vosgerau, J., Anderson, E., & Ross, W. T. (2008). Can Inaccurate Perceptions in Business-to-Business (B2b) Relationships Be Beneficial? *Marketing Science*, 27(2), 205-224. doi:10.1287/mksc.1070.0284
- Wetzels, M., Odekerken-Schröder, G., & van Oppen, C. (2009). Using Pls Path Modeling for Assessing Hierarchical Construct Models: Guidelines and Empirical Illustration. *MIS Quarterly*, 33(1), 177-195. doi:10.2307/20650284
- World Economic Forum. (2017). Digital Transformation Initiative – Professional Services Industry. Retrieved from
- Xue, Y., Liang, H., & Wu, L. (2011). Punishment, Justice, and Compliance in Mandatory It Settings. *Information Systems Research*, 22(2), 400-414. doi:10.1287/isre.1090.0266
- Zhang, C., Zhuang, G., Yang, Z., & Zhang, Y. (2017). Brand Loyalty Versus Store Loyalty: Consumers' Role in Determining Dependence Structure of Supplier-Retailer Dyads. *Journal of Business-to-Business Marketing*, 24(2), 139-160. doi:10.1080/1051712X.2017.1314127
- Zhuang, G., Xi, Y., & Tsang, A. S. L. (2010). Power, Conflict, and Cooperation: The Impact of Guanxi in Chinese Marketing Channels. *Industrial Marketing Management*, 39(1), 137-149. doi:10.1016/j.indmarman.2008.07.002