# Web Appendices

**Understanding the Impact of Relationship Disruptions**

Christian Schmitz, Maximilian Friess, Sascha Alavi, Johannes Habel

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# WEB APPENDIXES

# Web Appendix W1

# Overview of Preliminary Manager Survey

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Survey Statistics** | **Respondents**  N=273 | |  | |  | |
| **Demographics** | **Gender:**  39.1% female, 60.9% male | | **Age:**  Ø 46.5 | | **Job Experience** (Years)  Ø 20.5 | |
| **Respondent’s**  **Position** | Operative Purchasing | Strategic Purchasing | Head of Purchase | Head of  Business Unit | General Management | Other |
| 16.1% | 6.9% | 4.6% | 10.3% | 44.3% | 17.8% |
| **Industry** | Software/IT | Industry/ Manufacturing | Finance/ Banking | Professional Services | Government | Other |
|  | 8.1% | 16.9% | 9.9% | 33.1% | 15.7% | 16.3 |

# Web Appendix W2

**Relationship disruptions can benefit performance, if customer perceives relationship as valuable, anticipates further value potentials and experiences value creating activities after disruption**RelDisR3-ModeratorFigure4

# Web Appendix W3

# Model Free-Evidence: Relative Development of (a) New Sale Revenue and (b) Resale Revenue for Disruption Group

Model-FreeEvidenceAug19

# Web Appendix W4

# Evaluation of Common Trends: Development of (a) New Sale Revenue and (b) Resale Revenue before Disruption

CommonTrendAug19

# Web Appendix W5

# Model Specification

**Basic Difference-in-Differences Specification with Two Time Periods and One Treatment**

(1) yit = b0 + b1Treatmenti + b2Post\_Periodt + b3Disruptioni × Post\_Periodt+ εit,

where y is the outcome, Treatment is a time-invariant dummy indicating if individual i pertains to the control (0) or treatment group (1), Post\_Period is a time-varying dummy reflecting whether the observation is measured before (0) or after the treatment (1), and εis the random error component. The subscript i refers to an individual customer, and the subscript t reflects the related time period (before or after the treatment) of the observation.

**Main Effect Model Specification (Models 0, 1, and 2, in Table 5)**

(2) Total\_Revenueit = b0 + b1Disruptioni + b2Post\_Periodt

+ b3Disruptioni × Post\_Periodt

+ b4Customer’s\_Interactivity\_with\_Firmit

+ b5Customer’s\_Relative\_Importanceit

+ b6Customer’s\_Portfolio\_Breadthit

+ b7Customer’s\_Portfolio\_Complexityit

+ b8Sales\_Growth\_Rate\_1it

+ b9Sales\_Growth\_Rate\_2it

+ b10Sales\_Growth\_Rate\_3it

+ b11Industry\_Dummiesi

+ b12Sales\_Region\_Dummiesi

+ b13Quarter\_Dummiesi

+ εit

(3) Resale\_Revenueit = b0 + b1Disruptioni + b2Post\_Periodt

+ b3Disruptioni × Post\_Periodt

+ b4Customer’s\_Interactivity\_with\_Firmit

+ b5Customer’s\_Relative\_Importanceit

+ b6Customer’s\_Portfolio\_Breadthit

+ b7Customer’s\_Portfolio\_Complexityit

+ b8Sales\_Growth\_Rate\_1it

+ b9Sales\_Growth\_Rate\_2it

+ b10Sales\_Growth\_Rate\_3it

+ b11Industry\_Dummiesi

+ b12Sales\_Region\_Dummiesi

+ b13Quarter\_Dummiesi

+ εit

(4) New\_Sale\_Revenueit = b0 + b1Disruptioni + b2Post\_Periodt

+ b3Disruptioni × Post\_Periodt

+ b4Customer’s\_Interactivity\_with\_Firmit

+ b5Customer’s\_Relative\_Importanceit

+ b6Customer’s\_Portfolio\_Breadthit

+ b7Customer’s\_Portfolio\_Complexityit

+ b8Sales\_Growth\_Rate\_1it

+ b9Sales\_Growth\_Rate\_2it

+ b10Sales\_Growth\_Rate\_3it

+ b11Industry\_Dummiesi

+ b12Sales\_Region\_Dummiesi

+ b13Quarter\_Dummiesi

+ εit

In these equations, Total\_Revenue, Resale\_Revenue, and New\_Sale\_Revenue are log-transformed outcome variables for each customer i in period t; Disruption is a time-invariant dummy reflecting whether individual i is in the control (0) or disruption group (1); Post\_Period is a time-varying dummy reflecting whether the observation is measured before (0) or after the disruption (1); εis the random error component; the subscript i relates to an individual customer; and the subscript t reflects the related time period (before or after the disruption). We calculate independent variables using data from T0 and T1 (tIV = 0 reflects data from T0; tIV = 1 reflects data from T1) and the dependent variables using data from T1 and T2 (tDV = 0 reflects data from T1; tDV = 1 reflects data from T2) to prevent the possibility of reverse causality.

**Moderated Effect Model Specification (Models 3d, 4d in Table 6)**

(5) New\_Sale\_Revenueit = b0 + b1Disruptioni + b2Post\_Periodt

+ b3Disruptioni × Post\_Periodt

+ b4Financial\_Benefitit × Disruptioni × Post\_Periodt

+ b5Functional\_Benefitit × Disruptioni × Post\_Periodt

+ b6Contractual\_Bondsit × Disruptioni × Post\_Periodt

+ b7Complex\_Growthit × Disruptioni × Post\_Periodt

+ b8Product\_Line\_Growthit × Disruptioni × Post\_Periodt

+ b9Purchase\_Process\_Variabilityit × Disruptioni × Post\_Periodt

+ b10Cross-Selling\_Intensityit × Disruptioni × Post\_Periodt

+ b11Personal\_Communication\_Intensityit × Disruptioni × Post\_Periodt

+ b12Financial\_Benefitit

+ b13Functional\_Benefitit

+ b14Contractual\_Bondsit

+ b15Complex\_Growthit

+ b16Product\_Line\_Growthit

+ b17Purchase\_Process\_Variabilityit

+ b18Xit

+ εit.

(6) Resale\_Revenueit = b0 + b1Disruptioni + b2Post\_Periodt

+ b3Disruptioni × Post\_Periodt

+ b4Financial\_Benefitit × Disruptioni × Post\_Periodt

+ b5Functional\_Benefitit × Disruptioni × Post\_Periodt

+ b6Contractual\_Bondsit × Disruptioni × Post\_Periodt

+ b7Complex\_Growthit × Disruptioni × Post\_Periodt

+ b8Product\_Line\_Growthit × Disruptioni × Post\_Periodt

+ b9Purchase\_Process\_Variabilityit × Disruptioni × Post\_Periodt

+ b10Cross-Selling\_Intensityit × Disruptioni × Post\_Periodt

+ b11Personal\_Communication\_Intensityit × Disruptioni × Post\_Periodt

+ b12Financial\_Benefitit

+ b13Functional\_Benefitit

+ b14Contractual\_Bondsit

+ b15Complex\_Growthit

+ b16Product\_Line\_Growthit

+ b17Purchase\_Process\_Variabilityit

+ b18Xit

+ ϵit.

In these equations, Xit reflects time-invariant (i) and time-varying (it) control terms and variables.

# Web Appendix W6

# Analysis of Substitution Effects

As initial test, we compare the correlations among the developments of new sale revenue and resale revenue prior to and after a relationship disruption. If substitution effects bias our results, sales developments (of resale and new sale revenues) could correlate negatively and more strongly among customers who have experienced a relationship disruption, relative to the control group customers. We find similar negative correlations in the developments of resale and new sale revenues in the disruption group (–.22) and control groups (–.19). The correlations do not differ significantly (no overlap of confidence intervals), so the results suggest that some share of new sale business regularly stems from substituting for existing products, independent of the occurrence of a relationship disruption.

To isolate the potential substitution effect further, we also directly adjusted our new sale revenue measure by substituting revenues (net new sale revenues). The cooperating company provided data about the characteristics of its product portfolio, including the substitution relationships of specific products. We cross-validated these relationships by exploring negative correlations among the sales development of substituting products. Thus we identified 162 potential substitution relationships and adjusted our new sale revenue measure by excluding these revenues. With a seemingly unrelated regression (Zellner 1963), we explore whether a relationship disruption also positively affects non-substituting net new sale revenue, with an effect that is significantly different from the influence on the regular new sale revenue measure (Table W6). An interpersonal relationship disruption increases non-substituting new sale revenue (b = .44, *p* < .01), such that substitution effects seem to hamper the relative new sale revenue gains after relationship disruption by about 5.6%. The difference between effects is not significant (posterior Wald test, *p* > .10). Therefore, new sale revenue gains following a relationship disruption do not appear unduly rooted in substitution effects and instead may be explained by the identification of new customer needs.

# Table W6

# Substitution Analysis Using Seemingly Unrelated Regression Technique

|  |  |  |
| --- | --- | --- |
| **Treatment Effect of Disruption on New Sale Revenue and Non-Substituted New Sale Revenue** |  | |
| New Sale Revenue  DiD1 Est. (SE) | Net New Sale Revenue (non-substituting)  DiD2 Est. (SE) |
|  |  |  |
| **Average Disruption Effect** |  |  |
| Post-Period Dummy × Rel. Disruption Dummy (DiD) | .42\*\*\* (.15) | .44\*\*\* (.15) |
|  |  |  |
| Control Variables and Effects | included | included |
|  |  |  |
| Wald Test Null Hypothesis DiD1 = DiD2 | p>.10 | |
| \**p* < .10, \*\**p* < .05, \*\*\**p* < .01 (all based on two-tailed test).  Notes: Sample size n = 2040. DiD Est. = Estimate for the difference in difference, reflecting average treatment effect. To obtain robust results, we included all control variables from our main effect analysis and the predictors of the moderation analysis into the model estimation. Effects are not displayed in this table for clarity. | | |

Zellner, Arnold (1963), “Estimators for Seemingly Unrelated Regression Equations: Some exact Finite Sample Results," *Journal of the American Statistical Association*, 58 (304), 977-992.

# Web Appendix W7

# Robustness Check: Estimate Stability

We test for stability of the effects across various subsamples (Table W7). To compare treatment effects of a disruption among subsamples, we split the disruption treatment dummy, indicating the occurrence of a disruption and membership to Groups 1 or 2, such as customers in the wholesale and retail industry (Group 1) or other industries (Group 2). We then constructed two difference-in-differences (DiD) estimators by calculating the interaction effects for each disruption treatment dummy and the time dummy. The illustrated effects reflect the average disruption effect per subsample. A posterior Wald test of parameter equality (null hypothesis) refers to treatment effects of both comparison groups. To attain robust results, we include all control variables from our main effect analysis and the predictors of our moderation analysis in the model estimation.

First, we test whether the effect of a relationship disruption significantly differs when the salesperson leaves or remains employed in the selling firm (Model A). We find no significant difference (*p >* .10), so the effects are not substantively affected by a salesperson’s potential defection to competitors and related purchase shifts to competitors (e.g., Palmatier, Scheer, and Steenkamp 2007). Second, we test whether the effects are biased by seasonal business heterogeneity (Model B) by comparing the effect of disruptions in the first six versus last six months of 2014. Again, we find no significant difference (*p >* .10), so the results remain stable across seasons. Third, we identify interpersonal relationship with short versus long tenures (Model C) according to whether disruptions occurred in the year prior to the timeframe we used in our main analysis (2011). They are short tenure if the relationship had been recently disrupted, prior to the time considered in our main analysis. The results indicate no significant differences, so the tenure of the prior relationship does not appear to indicate risks or opportunities of relationship disruptions. Fourth, we compare the stability of our estimates across sales regions and customer industries, in terms of customers in the largest sales region (largest industry, namely, wholesale and retail) with customers in other sales regions (industries). The results show no significant differences (*p >* .10), so the estimates are stable across industries and sales regions.

# TABLE W7

# Robustness Check: Differences in Average Disruption Effect between Subsamples

|  |  |  |
| --- | --- | --- |
| **Average Disruption Effect**  **per Subsample** | **New Sale Revenue**  DiD Est. (SE) | **Resale Revenue**  DiD Est. (SE) |
|  |  |  |
| **Model A: Differences in Disruption Type** |  |  |
| (A1) disruption due to salesperson departure/turnover | .32\* (.17) | *-.33\*\*\* (.09)* |
| (A2) disruption due to restructuring and reassignment | .61\*\*\* (.22) | *-.33\*\*\* (.08)* |
| Wald Test Null Hypothesis (A1) = (A2) | *p*>.10 | *p*>.10 |
|  |  |  |
| **Model B: Differences in Disruption Time** |  |  |
| (B1) disruption at first 6 month of 2014 | .30\* (.25) | -.38\*\*\* (.06) |
| (B2) disruption at last 6 month of 2014 | .71\*\*\* (.25) | -.21 (.16) |
| Wald Test Null Hypothesis (B1) = (B2) | *p*>.10 | *p*>.10 |
|  |  |  |
| **Model C: Tenure-Related Differences** |  |  |
| (C1) disruption at short interpersonal relationship tenure | .48\*\*\* (.17) | -.28\*\*\* (.09 |
| (C2) disruption at long interpersonal relationship tenure | .29 (.22) | -.42\*\*\* (.07) |
| Wald Test Null Hypothesis (C1) = (C2) | *p*>.10 | *p*>.10 |
|  |  |  |
| **Model D: Regional Differences** |  |  |
| (D1) disruption at customer in largest sales region | .33 (.22) | -.39\*\*\* (.08) |
| (D2) disruption at customer in other regions | .47\*\*\* (.18) | -.30\*\*\* (.09) |
| Wald Test Null Hypothesis (D1) = (D2) | *p*>.10 | *p*>.10 |
|  |  |  |
| **Model E: Industry Differences** |  |  |
| (E1) disruption at customer in Wholesale  and Retail Industry | .37\* (.19 | -.32\*\*\* (.07) |
| (E2) disruption at customer in other Industries | .47\*\*\* (.18) | -.31\*\*\* (.09) |
| Wald Test Null Hypothesis (E1) = (E2) | *p*>.10 | *p*>.10 |
|  |  |  |
| \**p* < .10, \*\**p* < .05, \*\*\**p* < .01 (all based on two-tailed test)  Notes: Sample size n = 2040. DiD Est. = Estimate for difference in difference, reflecting average treatment effect. We report unstandardized coefficients (robust standard errors in brackets are clustered on individual customers). Control effects are not displayed in this table for clarity. | | |

# Web Appendix W8

# Robustness Check: Non-Randomness of Interpersonal Relationship Disruption

With a two-stage Heckman selection correction (Heckman 1979), we account for the potential non-randomness of relationship disruptions that might be unobserved in our core analysis. We calculated three additional variables that were not part of our core analysis but that might predict the probability of a relationship disruption: (1) regional disruption rate, (2) overall performance of the prior salesperson, and (3) the performance growth rate of the prior salesperson. The regional disruption rate (disruptions for other customers in the same sales region) serves as the instrument for the selection correction. Recent research has used similar instruments that reflect the treatment’s influence in a peer region, a peer industry, or a proximal peer group (Bommaraju et al. 2018; Saboo et al. 2017; Shi et al. 2017). A regional disruption rate satisfies the condition for relevance, because it is related to the occurrence of a relationship disruption at the focal customer, and it satisfies the exclusion restriction, because it is unrelated to resale revenue and new sale revenue with the specific, individual customer (i.e., not correlated with the error term of our main regressions). First, when a salesperson changes (e.g., illness, job rotation, turnover), customers may be reassigned to other salespeople, and the relationship disruption for the focal customer strongly relates to relationship disruptions for other customer relationships in the same sales region, satisfying the relevance criterion. Second, relationship disruptions between the selling firm and other customers within the same sales region are unlikely to affect business with the focal customer; information about these other disruptions might not even be available to the focal customer, and even if that customer is aware of them, the information is unlikely to affect its demand for the products and services of the selling firm.

In a probit regression with all the variables from our core analysis and the three newly calculated variables, we predict the relationship disruption (Table W8A). Next, we compute and integrate the inverse Mills ratio in our DiD analysis and repeat the hypotheses tests. The results indicate that our findings are robust to potential selection bias (Table W8B).

Bommaraju, Raghu, Michael Ahearne, Zachary R. Hall, Seshadri Tirunillai, and Son. K. Lam (2018), “The Impact of Mergers and Acquisitions on the Sales Force,” *Journal of Marketing Research*, 55 (2), 254-264.

Heckman, James J. (1979), “Sample Selection Bias as a Specification Error,” *Econometrica*, 47 (1), 153–162.

Saboo, Alok R., Amalesh Sharma, Anindita Chakravarty, and V. Kumar (2017), “Influencing Acquisition Performance in High-Technology Industries: The Role of Innovation and Relational Overlap,” *Journal of Marketing Research*, 54 (2), 219-238.

Shi, Huanhuan, Shrihari Sridhar, Rajdeep Grewal, and Gary Lilien (2017), “Sales Representative Departures and Customer Reassignment Strategies in Business-to-Business Markets,” *Journal of Marketing*, 81 (2), 25-44.

# TABLE W8A

# Heckman Selection Model (1) Probit Regression

|  |  |
| --- | --- |
| **Independent Variable** (Pre-Disruption) | **DV: Disruption** (yes/no)  Est. (SE) |
| Regional Disruption Rate | -6.72\*\*\* (.95) |
| Salesperson Performance | .018 (.02) |
| Salesperson Performance Growth | .017\* (.01) |
|  |  |
| Financial Benefit | .22 (.22) |
| Functional Benefit | -1.08 (.72) |
| Contractual Bonds | -.17\* (.09) |
|  |  |
| Complex Growth | -.02 (.05) |
| Product Line Growth | -.06\* (.04) |
| Purchase Process Variability | .01 (.14) |
|  |  |
| Customer’s Interactivity with Firm | -.01 (.06) |
| Customer’s Relative Importance | -.11 (.14) |
| Customer’s Portfolio Breadth | .003 (.004) |
| Customer’s Portfolio Complexity | -.13 (.23) |
| Sales Growth Rate 1 | -.01 (.02) |
| Sales Growth Rate 2 | -.002 (.01) |
| Sales Growth Rate 3 | .001 (.01) |
| Industry, Sales Region and Quarter Fixed Effects | Included |
| Constant | -1.83\*\*\* (.51) |
|  |  |
| Pseudo R-Squared | .071 |
| ns *p* > .10, \**p* < .10, \*\**p* < .05, \*\*\**p* < .01 (all based on two-tailed test).  Notes: Sample size n = 2040. We report unstandardized coefficients (standard errors in brackets). To obtain the inverted Mills ratio, we first conducted a probit regression to estimate the probability of being treated. | |

# TABLE W8B

# Heckman Selection Model (2) IMR Controlled Model

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Independent Variables** (IV) | Model 1: Moderation Model  **Resale Revenue (log)** | | | Model 2: Moderation Model  **New Sale Revenue (log)** | | |
| (a) With controls  Est. (SE) | (b) With  main effects  Est. (SE) | (c) With moderation effects  Est. (SE) | (a) With controls  Est. (SE) | (b) With  main effects  Est. (SE) | (c) With moderation effects  Est. (SE) |
| **Treatment Effect of Disruption** |  |  |  |  |  |  |
| Post-Period Dummy x Rel. Disruption Dummy (DiD) | -.34\*\*\* (.07) | -.33\*\*\* (07) | -.39\*\*\* (.10) | .42\*\*\* (.15) | .41\*\*\* (.15) | ns |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Inverse Mills Ratio** | -.67\*\*\* (.21) | -.55\*\*\* (.20) | -.54\*\*\* (.20) | .26\* (.16) | ns | ns |
|  |  |  |  |  |  |  |
| **Main Effects Relationship Strength** |  |  |  |  |  |  |
| Financial Benefit |  | -1.40\*\*\* (.29) | -1.59\*\*\* (.34) |  | -.53\* (.30) | -.81\*\* (.31) |
| Functional Benefit |  | ns | ns |  | ns | ns |
| Contractual Bonds |  | .77\*\*\* (.13) | .64\*\*\* (.14) |  | ns | ns |
|  |  |  |  |  |  |  |
| **Main Effects Relationship Dynamics** |  |  |  |  |  |  |
| Complex Growth |  | ns | .15\*\*\* (.04) |  | ns | .18\*\* (.07) |
| Product Line Growth |  | -.42\*\*\* (.06) | -.46\*\*\* (.07) |  | .36\*\*\* (.08) | .36\*\*\* (.09) |
| Purchase Process Variability |  | .42\*\* (.16) | .32\* (.18) |  | .79\*\*\* (.17) | .94\*\*\* (.19) |
|  |  |  |  |  |  |  |
| **Moderation Effects Relationship Strength** |  |  |  |  |  |  |
| Financial Benefit |  |  | 1.09\*\* (.51) |  |  | 1.66\*\* (.79) |
| Functional Benefit |  |  | 4.63\* (2.79) |  |  | 9.19\* (4.92) |
| Contractual Bonds |  |  | 1.02\*\*\* (.19) |  |  | ns |
|  |  |  |  |  |  |  |
| **Moderation Effects Relationship Dynamics** |  |  |  |  |  |  |
| Complex Growth |  |  | -.14\*\*\* (.05) |  |  | -.19\*\*\* (.07) |
| Product Line Growth |  |  | .67\*\*\* (.10) |  |  | ns |
| Purchase Process Variability |  |  | .69\*\* (.30) |  |  | -.99\*\* (.42) |
|  |  |  |  |  |  |  |
| **Moderation Effects Relationship Management** |  |  |  |  |  |  |
| Personal Communication Intensity |  |  | .31\*\*\* (.11) |  |  | ns |
| Cross-Selling Intensity |  |  | ns |  |  | .48\*\* (.21) |
|  |  |  |  |  |  |  |
| **Control Variables** |  |  |  |  |  |  |
| Relationship Disruption Dummy, Post-Disruption Period, Control Terms and Variables | Included | Included | Included | Included | Included | Included |
|  |  |  |  |  |  |  |
| Constant | 8.81\*\*\* (.39) | 9.98\*\*\* (.49) | 10.35\*\*\* (.52) | 4.67\*\*\* (.31) | 4.44\*\*\* (.46) | 4.56\*\*\* (.48) |
| R-Squared | .384 | .433 | .444 | .161 | .186 | .192 |
| ns *p* > .10, \**p* < .10, \*\**p* < .05, \*\*\**p* < .01 (all based on two-tailed test).  Notes: Sample size n = 2040. We report unstandardized coefficients (robust standard errors in brackets are clustered on individual customers) and use log-transformed dependent variable. We included the inverted Mills ratio from the first-stage Heckman selection correction and repeated the difference-in-differences analysis. | | | | | | | |

# Web Appendix W9

# Robustness Check: Comparability of Treatment and Control Groups through Propensity Score Matching

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Propensity Score Matching** | **Observations** | **Hypothesis** | **Average Treatment Effects** (ATE) | |
| **New Sale Revenue**  ATE Est. (SE) | **Resale Revenue**  ATE Est. (SE) |
| **Main Effect of Relationship Disruption** | N=2,040 | H1(-), H2(+) | .31\*\* (.15) | -.26\*\* (.13) |
|  |  |  |  |  |
| **Effect of Relationship Disruption at prior ‘Firm Level Relationship Strength**1 |  |  |  |  |
| at **Low** Financial Benefit | N=1,228 | H3a(+) H4a(+) | ns | -.13\*\* (.06) |
| at **High** Financial Benefit | N=812 | .46\*\* (.22) | ns |
|  |  |  |  |  |
| at **Low** Functional Benefit | N=1,395 | H3b(+) H4b(+) | ns | ns |
| at **High** Functional Benefit | N=645 | .52\* (.29) | .12\*\* (.05) |
|  |  |  |  |  |
| at **Low** Contractual Bonds | N=1,024 | H4c(+) | ns | -.22\*\*\* (.07) |
| at **High** Contractual Bonds | N=1,016 | ns | ns |
|  |  |  |  |  |
| **Effect of Relationship Disruption at prior ‘Firm Level Relationship Dynamics’**1 |  |  |  |  |
| at **Low** Complex Growth | N=1,736 | H5a(-) H6a(-) | .43\*\* (.17) | -.20\* (.11) |
| at **High** Complex Growth | N=304 | ns | -.29\*\* (.12) |
|  |  |  |  |  |
| at **Low** Product Line Growth | N=1,573 | H5b(-) H6b(+) | ns | -.16\*\* (.06) |
| at **High** Product Line Growth | N=467 | ns | ns |
|  |  |  |  |  |
| at **Low** Variability in Purchase Process | N=641 | H5c(-) H6c(+) | .62\*\* (.25) | -.31\*\* (.12) |
| at **High** Variability in Purchase Process | N=1,399 | ns | ns |
|  |  |  |  |  |
| **Effect of Relationship Disruption at subsequent ‘Relationship Management’** |  |  |  |  |
|  |  |  |  |  |
| at **Lower** Cross-Selling Intensity | N=1,660 | H7a(+) | ns | ns |
| at **Higher** Cross-Selling Intensity | N=1,718 | .59\*\*\* (.11) | ns |
|  |  |  |  |  |
| at **Lower** Personal Communication Intensity | N=1,759 | H7b(+) | ns | -.51\*\*\* (.08) |
| at **Higher** Personal Communication Intensity | N=1,621 | ns | ns |
|  |  |  |  |  |
| ns *p >* .10, \**p* < .10, \*\**p* < .05, \*\*\**p* < .01 (all based on two-tailed test).  Notes: Average treatment effect by propensity score matching estimator with Probit model, estimated with Stata teffects psmatch (estimated standard error in brackets). We include a prior level of the dependent variable, main effects of our moderators, and all control variables for all propensity score estimations. We drew subgroups for the moderation analysis from a mean split of the respective moderating variable, resulting in subgroups of high and low value. For dummy indicators of salesperson’s relationship management, “lower intensity” includes treated customers with lower intensity value, and “higher” includes treated customers with higher intensity value only. | | | | | |

# Web Appendix W10

# Additional Analysis: Contingent Total Revenue Effect

We illustrate the detailed results of our additional analysis for the contingent effect of a relationship disruption on total revenue. We reran the moderation model to predict the contingent development of total revenue, then applied a Johnson-Neyman technique (Johnson and Neyman 1936; Spiller et al. 2013) to find the range of significance (RoS) within which simple effects of each interaction become significant. The regression results are in Table W10.

*Harmful effects on total revenue.* A relationship disruption decreases total revenue only if financial benefits prior to the disruption were less than .98, that is, when the focal customer paid 2% higher prices than other customers (RoS1Lower < .98, bJN1L= –.07, *p* = .05), the customer’s functional benefits had been below 1% (RoS2Lower < .01, bJN2L= –.07, *p* = .05), or contractual bonds had been below 36% (RoS3Lower < .36, bJN3L= –.06, *p* = .05). Appropriate firm-level relationship strength thus may effectively buffer total revenue losses after disruption. With regard to relationship dynamics, a relationship disruption harms total revenue if complex growth prior to disruption was above .37 (RoS4 > .37, bJN4 = –.07, *p* = .05) or product line growth was below 1.07 (RoS5Lower < .1.07, bJN4L= –.07, *p* = .05). These findings support our findings that high dynamics due to complex growth may harm revenue developments after disruption, but high dynamics from product line growth may prevent total revenue losses. We do not find a significant interaction with the variability of the purchase process, presumably due to countervailing effects on resale and new sale revenue.

*Beneficial effects on total revenue.* In other conditions, total revenues may benefit from a relationship disruption.The firm enjoys increased total revenues after disruption if financial benefits had been above 1.5, such that the focal customer paid 33.3% lower prices than other customers (RoS1Upper > 1.50, bJN1U= .36, *p* = .05), the customer’s functional benefits had been above .16 (RoS2Upper > .16, bJN2U= .15, *p* = .05), or contractual bonds were above .80 prior to the disruption (RoS3Upper > .80, bJN3U= .13, *p* = .05). That is, if the customer reaped strong relational benefits prior to disruption or if strong contractual bonds tie the business, a relationship disruption may benefit total revenue developments. With regard to relationship dynamics, the firm enjoys increased total revenue after disruption as long as product line growth was above 2.35 prior to a relationship disruption (RoS5Upper > 2.35, bJN5U= .19, *p* = .05). Finally, the incoming salesperson’s relationship management affects total revenue after disruption. In our sample, a higher cross-selling intensity of the incoming salesperson effectively reduces total revenue losses from 24.6% to just 6.2% (b = .16, *p <* .05), and higher personal communication intensity can even increase total revenue after a disruption by 4% (b = .26, *p <* .05).

Johnson, Palmer O. and Jerzy Neyman (1936), “Tests of Certain Linear Hypotheses and Their Application to Some Educational Problems,” *Statistical Research Memoirs*, 1, 57–93.

Spiller, Stephen A., Gavan J. Fitzsimons, John G. Lynch Jr., and Gary H. McClelland (2013), “Spotlights, Floodlights, and the Magic Number Zero: Simple Effects Tests in Moderated Regression,” *Journal of Marketing Research*, 50 (2), 277-288.

# TABLE W10

# Moderating Impact of Relationship Disruption on Total Revenue

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Independent Variables** (IV) | **Total Revenue Moderation Model**  Total Revenue (log) | | | | |
| (a) With Main Effects  Est. (SE) | (b) With moderation Effects I  Est. (SE) | (c) With moderation Effects II  Est. (SE) | (d) With moderation Effects III  Est. (SE) | |
| **Treatment Effect of Disruption** |  |  |  |  | |
| Post-Period Dummy x Rel. Disruption Dummy (DiD) | -.08\*\*\* (.03) | ns | -.04 (.03) | -.22\*\*\* (.08) | |
|  |  |  |  |  | |
| **Main Effects of Firm Level Relationship Strength** |  |  |  |  | |
| Financial Benefit | -1.01\*\*\* (.23) | -1.16\*\*\* (.26) | -1.15\*\*\* (.26) | -1.14\*\*\* (.26) | |
| Functional Benefit | ns | ns | ns | ns | |
| Contractual Bonds | 1.14\*\*\* (.09) | 1.08\*\*\* (.10) | 1.08\*\*\* (.10) | 1.07\*\*\* (.10) | |
|  |  |  |  |  | |
| **Main Effects of Firm Level Relationship Dynamics** |  |  |  |  | |
| Complex Growth | ns | ns | .12\*\*\* (.03) | .12\*\*\* (.03) | |
| Product Line Growth | ns | ns | -.06\* (.03) | -.06\* (.03) | |
| Purchase Process Variability | .76\*\*\* (.13) | .77\*\*\* (.13) | .73\*\*\* (.14) | .73\*\*\* (.14) | |
|  |  |  |  |  | |
| **Moderation Effects of Firm Level Relationship Strength** |  |  |  |  | |
| Financial Benefit |  | .82\*\* (.38) | .83\*\*\* (.38) | .80\*\* (.38) | |
| Functional Benefit |  | 6.13\*\*\* (2.20) | 6.17\*\*\* (2.20) | 6.34\*\*\* (2.16) | |
| Contractual Bonds |  | .42\*\*\* (.15) | .45\*\*\* (.15) | .51\*\*\* (.15) | |
|  |  |  |  |  | |
| **Moderation Effects of Firm Level Relationship Dynamics** |  |  |  |  | |
| Complex Growth |  |  | -.11\*\*\* (.04) | -.11\*\*\* (.04) | |
| Product Line Growth |  |  | .20\*\* (.08) | .21\*\*\* (.07) | |
| Purchase Process Variability |  |  | ns | ns | |
|  |  |  |  |  | |
| **Moderation Effects of Salesperson Relationship Management** |  |  |  |  | |
| Cross-Selling Intensity |  |  |  | .16\* (.09) | |
| Personal Communication Intensity |  |  |  | .26\*\*\* (.10) | |
|  |  |  |  |  | |
| **Control Variables** |  |  |  |  | |
| Relationship Disruption Dummy, Post-Disruption Period, Control Terms and Variables | Included | Included | Included | Included | |
|  |  |  |  |  | |
| Constant | 8.52\*\*\* (.30) | 8.71\*\*\* (.32) | 8.74\*\*\* (.33) | 8.73\*\*\* (.33) | |
| R-Squared | .513 | .516 | .517 | .518 | |
| ns *p* > .10, \**p* < .10, \*\**p* < .05, \*\*\**p* < .01 (all based on two-tailed test).  Notes: Sample size n = 2040. We report unstandardized coefficients (robust standard errors in brackets are clustered on individual customers) and use the log-transformed dependent variable. | | | | |

# Web Appendix W11

# Supplemental Information on Research Context

The B2B logistics company that informs this study offers a broad portfolio of services, along the customer ‘s value chain, including warehousing and logistics of raw material, products, and goods (supplier logistics), internal logistic automation and outsourcing (production logistics, commissioning for assembling), warehousing and distribution of finished products, retail logistics and various supplemental services (tracking systems, digital information transport, process optimization).

*Complex vs. simple.* The company distinguishes its offerings as simple or complex to sell. Complex products require close, often continuous coordination between the salesperson and the customer (during and after the sales process), such as to ensure timely, secure cargo delivery and warehousing. For instance, complex services include the transport and warehousing of hazardous (e.g., chemical materials), high value, or demanding (e.g., cool chain logistics, bulky and heavy) goods. Such services are not necessarily customized to specific customer needs, because standard procedures can apply, even if continuous information flows are needed. For example, various IT services are complex in nature but not customized (e.g., secure data transfers, IT consulting seminars).

*Customized vs. standardized.* The company tracks whether offerings are customized for individual customers or sold in standard compositions. Customizing products to fit individual customer’s needs likely provides additional value to the customer (e.g., aligning interfaces can decrease coordination effort and increase logistical efficiency). In addition, customized solutions are often individually priced and negotiated. Because customers likely pay higher prices for customized solutions than standard ones, they should receive or at least anticipate additional value, in the form of functional benefits. Accordingly, some customized offerings still can be simple to sell, requiring only minimal coordination between the customer and salesperson (e.g., customized courier services for international and overnight transports). Other customized offerings require intense, continuous coordination among the relational partners (e.g., outsourcing entire logistics operation) and thus are more complex to sell.