

## INTERFIRM IT CAPABILITY PROFILES AND COMMUNICATIONS FOR COCREATING RELATIONAL VALUE: EVIDENCE FROM THE LOGISTICS INDUSTRY

**Arun Rai**

Center for Process Innovation and Department of Computer Information Systems, Robinson College of Business,  
Georgia State University, Atlanta, GA 30303 U.S.A. {arunrai@gsu.edu}

**Paul A. Pavlou**

Fox School of Business, Temple University, Philadelphia, PA 19122 U.S.A. {pavlou@temple.edu}

**Ghiyoung Im**

Computer Information Systems, College of Business, University of Louisville,  
Louisville, KY 40292 U.S.A. {ghiyoung@gmail.com}

**Steve Du**

Center for Process Innovation, Robinson College of Business, Georgia State University,  
Atlanta, GA 30303 U.S.A. {steve.du@zoho.com}

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## Appendix A

### Description of Measures<sup>1</sup>

#### ***KDM Archives***

The supplier used a third-party market research firm to collect data from key decision makers (KDMs) about their firm's relationship with the logistics supplier. The supplier targeted KDMs using a random sample of about 1 percent (approximately 3,000 buyers) across industries, relationship duration, and revenues of its large base of active buyers that were supported by an account executive at the supplier firm and that had a minimum threshold of shipping activity of at least one package per week or at least \$10,000 in annual revenues (to be considered a significant logistics relationship). The representative market research firm was provided an interview guide and contacted the KDMs by telephone to collect data on the following variables:

#### *Share of wallet (DV):*

What proportion of your current year's outsourced logistics budget was allocated to [SUPPLIER]?

#### *Buyer Loyalty to Supplier (DV, Cronbach's alpha = 0.82)*

Mean of the following three items:

1. On a scale where 1 means "not at all loyal" and 10 means "completely loyal," please rate how loyal you are to [SUPPLIER].
2. On a scale where 1 means "completely disagree," and 10 means "completely agree," please rate this statement: "I am comfortable enough with [SUPPLIER] that I do not seriously consider offers from other companies."

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<sup>1</sup>We do not include the name of the supplier or the names of the logistics systems for confidentiality reasons.

3. On a scale where 1 means “not at all recommend” and 10 means “very highly recommend,” please rate how likely you would be to recommend [SUPPLIER] to your business associates?

*Buyer satisfaction with supplier* (Control, Cronbach’s alpha = 0.85)

Mean of the following three items:

1. On a 0–100 scale, where 0 means you are “not at all satisfied,” and 100 means you are “completely satisfied,” how satisfied are you with [SUPPLIER]?
2. On a 1–10 scale, where 1 means “much worse than expected,” and 10 means “much better than expected,” compared to your expectations, what score would you give based on your experiences with [SUPPLIER]?
3. On a 1–10 scale, where 1 means “very far from the ideal” and 10 means “very close to the ideal,” thinking about the ideal supplier for logistics, how close would you say [SUPPLIER] comes to the ideal?

*Buyer size* (Control):

How many employees are there in your organization?

*Buyer’s total logistics spending* (Control):

What is your total outsourced logistics spending in the current year?

*Quality of servicing IT assets* (Control):

On a scale of 1–10, where 1 means “terrible” and 10 means “excellent,” please rate the [SUPPLIER] in terms of servicing its IT applications and hardware that are used for your logistics processes.

*Problem incidence* (Control) (n = 2,058):

Have you had a problem with [SUPPLIER] in the past 12 months? (1 = Yes, 2 = No)

We were able to obtain information from the vendor’s KDM archives on the following three measures for a subsample of relationships, and correlated each of them with the frequency of communication with account executives and IT executives:

\**Customer’s satisfaction with the vendor’s problem resolution* (scale: 1 = terrible, 10 = excellent) (Cronbach’s alpha = 0.85) (n = 383)

1. Being accountable when there is a problem
2. Taking care of the problem as quickly as possible
3. Doing everything they can to solve issues

\**Frequency of problems experienced* (Scale: 1 = Never, 2 = 1–2, 3 = 3–5, 4 = more than 5) (n = 163)

How many times have you experienced problems in package handling in the last 12 months?

\**Contact for a problem* (Scale: 0 = Account Executive, 1 = Other) (n = 1103)

When you have a problem with [SUPPLIER] who do you call?

Note: \*These three variables were used in *post hoc* analysis to examine the relationship between problem incidence and problem resolution satisfaction with strategic communications with account executives.

## **Technology Archives**

*Interfirm IT Capability Profile* (IV): Profile of IT capabilities in the previous year

The supplier’s technology archives maintained a transaction log on the IT systems that had been implemented for each buyer. We obtained the technology archive for the previous year so that we could determine the set of IT functionalities that were implemented and used in each relationship, enabling us to classify a relationship to an interfirm IT capability profile. Toward this end, we developed and validated a coding scheme (“Measures” subsection and Table 5) that we applied to determine the set of IT functionalities that had been implemented and were being used in an interfirm relationship and to classify a relationship into one of the four interfirm IT capability profiles.

*IT Utilization* (Control):

Percentage of the buyer’s logistics transactions with the supplier executed using the implemented set of IT functionalities

## **CRM Archives**

The vendor maintains a CRM system with information on its buyers, including the date when the account was created, the buyer's industry, and contacts between its account and IT executives with its buyers. The individuals at the supplier side who interact with the buyers are required to log site visits and phone calls in the CRM system with any notes pertaining to each contact. We were able to obtain summary information on the frequency of contact in terms of site visits and phone calls by account executives and by IT executives to develop the following measures:

*Interfirm communications for business development (IV)*: Total number of visits and phone calls in past year between the supplier's account executives and the buyer

*Interfirm communications for IT development (IV)*: Total number of visits and phone calls in past year between the supplier's IT executives and the buyer

*Relationship duration (Control)*: Time (in years) since the account was created

*Buyer industry (Control)*: Dummy variables based on NAICS code

## **Financial Archives**

We obtained archival data on transaction volume and revenues for all buyers to determine the following measures:

*Supplier dependence on buyer (Control)*: Buyer revenue for previous year/total revenue for previous year

*Transaction volume (Control)*: Total volume of shipments for previous year (weekly data in archives)

## Appendix B

### Robustness Analysis Using Alternative Scaling of IT Capability Profile Sophistication

We conducted a robustness test by scaling interfirm IT capability profile sophistication as a rank-ordered variable ( $X = \text{ITCapSoph}$ ) that ranges from 1 (IT Capability Profile A) to 4 (IT Capability Profile D). The pattern of the main effects of both IT capability profile sophistication and interfirm communications as well as their interaction effects using the rank-ordered coding are qualitatively similar to those reported in the paper using the profile coding. As such, we arrive at the same conclusions on the hypotheses supported regardless of the approach used to code IT capability profile sophistication (four profiles or rank-ordered), with the profile approach reported in the main paper providing richer insights on the differences in the main effects as well as in the interaction effects across the four IT capability profiles.

**Table B1. Results of Hierarchical Regression Analysis<sup>†</sup> (DV = SOW)<sup>‡</sup>**

Variable	Model 1a	Model 2a	Model 3a	Model 4a
Intercept	81.55** (3.37)	81.32** (3.35)	81.05** (3.35)	81.07** (3.36)
<i>Controls</i>				
Buyer Firm Size	-2.66** (0.42)	-2.75** (0.42)	-2.76** (0.42)	-2.76** (0.42)
Buyer Logistics Spending	-2.38** (0.41)	-2.69** (0.43)	-2.63** (0.43)	-2.63** (0.43)
Supplier's Buyer Dependence	2161** (670)	1749** (686)	1660** (687)	1682** (693)
Quality of Servicing IT Assets	1.69** (0.37)	1.67** (0.36)	1.68** (0.36)	1.68** (0.36)
Relationship Duration	0.00 (0.12)	0.00 (0.12)	0.01 (0.12)	0.01 (0.12)
Incidence of Problem	-0.95 (1.48)	-0.62 (1.47)	-0.61 (1.47)	-0.62 (1.47)
Buyer Satisfaction	0.21** (0.05)	0.22** (0.05)	0.21** (0.05)	0.21** (0.05)
IT Utilization	4.40** (1.85)	3.97* (1.86)	4.04* (1.85)	4.03* (1.86)
NAICS Sector 31-33	0.38 (1.60)	0.22 (1.59)	0.24 (1.59)	0.24 (1.59)
NAICS Sector 42-49	1.16 (1.55)	1.19 (1.55)	1.10 (1.55)	1.10 (1.55)
NAICS Sector 51-56	-0.83 (2.12)	-0.85 (2.11)	-0.85 (2.11)	-0.85 (2.11)
<i>Main Effects</i>				
Interfirm Communications for Business Development (ICBD)		-0.25 (0.72)	-0.26 (0.72)	-0.27 (0.72)
Interfirm Communications for IT Development (ICTD)		1.46* (0.88)	1.41* (0.88)	1.42* (0.88)
IT Capability Profile Sophistication (ITCapSoph)		3.93** (1.09)	3.70** (1.09)	3.73** (1.10)
<i>Interaction Effects</i>				
ICBD × ITCapSoph			2.02* (1.02)	2.10* (1.07)
ICTD × ITCapSoph				-0.37 (1.48)
Adjusted $R^2$	0.096	0.104	0.105	0.105
Adjusted $R^2$ diff.		0.007**	0.001*	-

N = 1659. (<sup>†</sup> $p < 0.10$ , <sup>\*</sup> $p < 0.05$ , <sup>\*\*</sup> $p < 0.01$ )

<sup>†</sup>Unstandardized coefficients (standard errors) are shown (one-tailed).

<sup>‡</sup>When predictor (X) and moderator (Z) are correlated, the interaction term ( $X \times Z$ ) can be confounded with unmeasured nonlinear terms ( $X^2$ ) (Carter and Russell 2003; Cortina 1993). In our sample, the correlations between ICBD and ICTD and the predictor (IT Capability Profile Sophistication) are low or insignificant, making such a confound a very unlikely scenario. However, to ensure the robustness of our findings, we evaluated the moderation models after including the squared terms of the predictor ( $X^2$ ) as a covariate, and obtained similar results to those reported in the table above.

<b>Table B2. Results of Hierarchical Regression Analysis<sup>†</sup> (DV = Loyalty)</b>				
<b>Variable</b>	<b>Model 1b</b>	<b>Model 2b</b>	<b>Model 3b</b>	<b>Model 4b</b>
Intercept	8.11** (0.19)	8.11** (0.19)	8.12** (0.19)	8.12** (0.19)
<i>Controls</i>				
Buyer Firm Size	-0.06** (0.02)	-0.06** (0.02)	-0.06** (0.02)	-0.06** (0.02)
Buyer Logistics Spending	-0.01 (0.02)	-0.03 (0.02)	-0.03 (0.02)	-0.03 (0.02)
Supplier's Buyer Dependence	53.31 <sup>+</sup> (37.7)	31.54 (38.7)	33.65 (38.7)	33.31 (39.1)
Quality of Servicing IT Assets	0.11** (0.02)	0.11** (0.02)	0.11** (0.02)	0.11** (0.02)
Relationship Duration	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)
Incidence of Problem	0.19* (0.08)	0.20** (0.08)	0.20** (0.08)	0.20** (0.08)
Buyer Satisfaction	0.08** (0.00)	0.08** (0.00)	0.08** (0.00)	0.08** (0.00)
IT Utilization	0.11 (0.10)	0.08 (0.10)	0.08 (0.10)	0.08 (0.10)
NAICS Sector 31-33	0.12 <sup>+</sup> (0.09)	0.12 <sup>+</sup> (0.09)	0.12 <sup>+</sup> (0.09)	0.12 <sup>+</sup> (0.09)
NAICS Sector 42-49	0.12 <sup>+</sup> (0.09)	0.12 <sup>+</sup> (0.09)	0.12 <sup>+</sup> (0.09)	0.12 <sup>+</sup> (0.09)
NAICS Sector 51-56	0.24* (0.12)	0.24* (0.12)	0.24* (0.12)	0.24* (0.12)
<i>Main Effects</i>				
Interfirm Communications for Business Development (ICBD)		-0.03 (0.04)	-0.03 (0.04)	-0.03 (0.04)
Interfirm Communications for IT Development (ICTD)		0.13** (0.05)	0.14** (0.05)	0.14** (0.05)
IT Capability Profile Sophistication (ITCapSoph)		0.09 <sup>+</sup> (0.06)	0.10 <sup>+</sup> (0.06)	0.10 <sup>+</sup> (0.06)
<i>Interaction Effects</i>				
ICBD × ITCapSoph			-0.05 (0.06)	-0.05 (0.06)
ICTD × ITCapSoph				0.01 (0.08)
Adjusted R <sup>2</sup>	0.412	0.415	0.414	0.414
Adjusted R <sup>2</sup> diff.		0.003**	-	-

N = 1650. (\* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ )

<sup>†</sup>Unstandardized coefficients (standard errors) are shown (one-tailed).

## References

- Carte, T. A., and Russell, C. J. 2003. "In Pursuit of Moderation: Nine Common Errors and Their Solutions," *MIS Quarterly* (27:3), pp. 479-501.
- Cortina, J. M. 1993. "Interaction, Nonlinearity, and Multicollinearity: Implications for Multiple Regression," *Journal of Management* (19:4), pp. 915-922.