

Exchange specificities of supplier relationship-building behaviours: the Japanese perspective

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ABSTRACT

This study investigates three types of supplier relationship-building behaviours (responding, alerting, and initiating behaviours) in a structural equation model data collected from 118 Japanese sample firms. It found unique procurement context-specificities of each behaviour. Building on the findings, we present some operational guidelines for marketing managers on the when's of each relationship-building behaviour for suppliers' pursuit of a successful CBSR.

INTRODUCTION

Not all exchanges warrant the pursuit of cooperative buyer-supplier relationships (CBSRs). Such is considered viable only when the extra management time and efforts are justified by the associated operational and/or strategic gains. For this reason, past scholars have proposed some conceptual frameworks to guide business practitioners on an appropriate context ("when's") for pursuing a CBSR (Spekman 1988; Olsen and Ellram 1997; Wilson 1995). For instance, Olsen and Ellram (1997) submitted a portfolio framework built on two procurement attributes, namely supply market characteristics (resource dependence and the criticality of the item) and environmental characteristics (market and technical uncertainty). In the model, pursuing a CBSR is warranted when the procurement situation is signified by high difficulty and high strategic importance.

The extent literature provides some operational insights into management of resource-demanding but productive buyer-supplier relationships. The Interaction Model (Hakansson 1982), built on the Inter-Organisational Theories, Social Exchange Theory and Transaction Cost Theory, explains that the character of interactions in the relationship is conditioned by the characteristics of the product exchanged and the degree of dynamism in the exchange market. Procurement situations characterised by the exchange of a complex product and/or by uncertainty necessitate undertakings of

substantial adaptations between exchange parties to facilitate successful exchanges (Hallen, Johanson and Mohamed, 1987).

From a supplier's perspective, adaptation-making is viewed as a relationship-building tool because the action not only determines the productivity of the exchange, but also signals its relationship commitment, allowing the supplier to influence the development of the relationship (Brennan and Turnbull 1996; Ford 1980). It is through such cooperative interaction behaviours that competent suppliers aim to manage the successful development of CBSRs.

Despite the importance of adaptation-making as a relationship-building tool, literature is limited. Past studies of a supplier's adaptation-making have focused primarily on the *what's* and *when's* (Ford 1980; Hakansson 1982; Hallen, Johanson and Mohamed, 1987; Hallen, Johanson and Seyed-Mohamed 1991; Turnbull and Valla 1986), overlooking the critical relationship management problem, the *how's* of adaptation-making. Taxonomies of the *what's* and *when's* of adaptation-making provide a foundation for the study and understanding of patterns of supplier adaptation-making. However, neither of those outcome-based frameworks provide insights into the dynamic interaction process prior to eventual adaptation-making. Some suppliers promote a cooperative atmosphere through their willingness and proactiveness for adaptation-making in the relationship, whereas others fail to do so, or may even project a conflictive atmosphere by their initial reluctance and resistance to adaptation-making (Hakansson and Lundgren 1996; Ganesan 1994).

In this respect, Rexha and Miyamoto's (2000) contribution is significant. Drawing on findings from case study research with leading Japanese manufacturers, they identify three types of supplier relationship-building behaviours in which preferred suppliers outperform competing suppliers, namely responding, alerting and initiating behaviours. They proposed a Supplier Adaptation Strategy Matrix (SASM) using the three principal procurement operation drivers (uninterrupted in-flow of purchased inputs, continuous cost reduction and quality improvement of sourced products and access to new product technologies) to highlight the *when's* of each of the behaviours.

This study tests the operational validity of the SASM model. It investigates the *when's* of each of the three supplier behaviours in a structural equation model with cross-sectional data collected from 118 Japanese manufacturing firms. As Japanese

manufacturers are commonly regarded as the best CCSR practitioners (Bensaou and Venkatraman 1995; Dyer, Cho and Chua 1998), the study outcomes are expected to produce a better understanding of CCSR management and marketing knowledge.

In the study, we operationalised the three procurement attributes with customer supply, market uncertainty associated with procurement of the focal product, a procurement volume of the product relative to that of other sourced products at sample firms, and customer perceived complexity of the product. In addition, it should be also noted that we employed the data on primary (the largest business share) suppliers of those procurements defined as operationally and/or strategically important to the sample firms for the following two reasons. Firstly, it was essential to ensure sample independence of the data for model testing. Secondly, given that the largest business share supplier is mostly likely to be a preferred supplier that outperforms competing suppliers of the focal procurement, we believe that our findings enable us to draw some prescriptive guidelines to marketing managers.

THEORETICAL FRAMEWORK

In the SASM model, Rexha and Miyamoto (2000) suggest that unique combinations of three procurement characteristics dictate different patterns of desired supplier relationship-building behaviours. The model explains that the need for each supplier responding, alerting and initiating behaviour to arises when the customer perceives greater operational opportunity, supply market uncertainty, and strategic value with the procurement of the focal product, respectively. In an exchange where the customer associates procurement of the focal product with low operational opportunity, but high supply market uncertainty and strategic value, the model dictates the need for more active supplier alerting and initiating behaviours, but not responding behaviour.

This framework is in line with theories on inter-firm relationships (the Transaction Cost and Interaction Model Theories) that stress a need for cooperative interactions for enhanced economic efficiency (economisation of the exchange and superior value creation) in the exchange characterised by those procurement attributes. It provides a guideline to business practitioners as to key relationship-marketing tools across different exchange relationships.

Yet, it is also inherited with the common limitation of a conceptual model – over simplification of complex reality. A better understanding of the *when's* for each relationship-building behaviour constitutes a platform of effective relationship-marketing practice as suggested by Miyamoto and Rexha's (in press) recent empirical research. This study evaluates operational validity of the model to provide empirical insights into the critical relationship-marketing management problem.

To explore relationships between the three procurement variables and three supplier relationship-building behaviours, we submit the following nine tentative hypotheses:

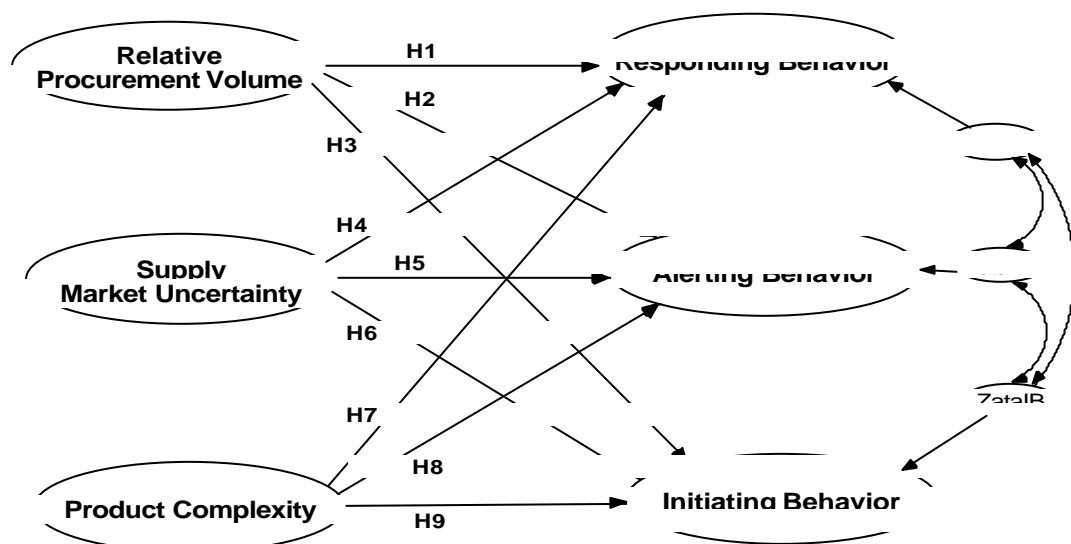
The larger a procurement volume of the focal product relative to that of others at the customer firm, the greater need for supplier responding (H1), alerting (H2), and initiating behaviours (H3).

The greater the customer's perceived supply market uncertainty associated with the product, the greater need for supplier responding (H4), alerting (H5), and initiating behaviours (H6).

The more complex the customer views the product, the greater need for supplier responding (H7), alerting (H8), and initiating behaviours (H9).

Figure 1 depicts our research framework with the hypotheses.

Figure 1: Research Model on Procurement Situation Specificities of 3 Supplier Relationship-Building Behaviors



Rexha and Miyamoto (2000) define the three supplier relationship-building behaviours as follows:

- responding behaviour is a supplier behaviour to accommodate necessary changes in the exchange in response to the customer's requests in the evolving exchange context;
- alerting behaviour is a supplier behaviour to keep the customer informed of supply market conditions and alert the customer of any possible sign of supply distraction as soon as it detects such an indication; and,
- initiating behaviour is a supplier's behaviour to proactively interact with the customer for creation of strategic value based on its technological competence.

METHODOLOGY

Sample Firms and Data Collection

A sampling frame was initially defined as the top 150 manufacturers, in terms of annual turnover, across six sectors found in the *Teikoku Databank: Zenkoku Arekore Kigyo Ranking 1998* (Teikoku Databank 1999), namely; (1) Food and Kindred Products; (2) Chemicals and Allied Products; (3) Industrial and Commercial Machinery and Computer Equipment; (4) Electronic and Other Electrical Equipment and Components; (5) Transportation Equipment; and (6) Measuring, Analysing, Controlling Instruments. However, due to a large number of non-manufacturers in the lists, additional manufacturing firms listed in the Tokyo stock market were also included in the frame. The final sampling frame consisted of 749 firms.

For data collection, we employed a mail survey and single key informant method defining a purchasing manager as a key informant. We prepared survey packages in Japanese and mailed them from Australia. Prior to a follow-up reminder, we received 9 letters declining their involvement, 9 undeliverable packages, 46 usable, and 2 non-usable responses. Follow-up reminders were mailed to 731 firms and generated a further 72 usable and 1 non-usable responses. Thus, the mail survey achieved a 16 per cent response rate (118 usable responses from the effective sample size of 731). A nonresponse analysis was conducted by comparing responses returned prior to and after the follow-up reminders, following the procedure recommended by Armstrong and Overton (1977). The finding of no significant group differences suggested an unlikely

non-response bias in the data. The final sample firm-sector distribution and the original firm-sector distribution (shown in parentheses) were as follows: Food and Kindred Products: 15 (110); Chemicals and Allied Products: 20 (137); Industrial and Commercial Machinery and Computer Equipment: 35 (158); Electronic and Other Electrical Equipment and Components: 15 (141); Transportation Equipment: 27 (121); and (6) Measuring, Analysing, Controlling Instruments: 6 (82).

In the questionnaire, informants were first asked to select an operationally and/or strategically important input purchased from at least two suppliers and then to provide information on their firms' business relationships with and attitudes towards the two competing suppliers of the focal products (the largest and the third largest business share suppliers, or the second largest supplier when there were only two suppliers). We believed that this questionnaire design would better simulate informants' real-life supplier auditing situations and thus produce more accurate responses. As noted earlier, we employed sample firms' ratings given to their primary (the largest business share) suppliers for this study. Sample firms, on average, met 42 per cent of procurement need of the focal products from their primary suppliers. Based on the notion that a business share allocation is a most common incentive and reward to a preferred (competent and hard-working) supplier (Miyamoto 2001), in this study, primary suppliers were assumed to be preferred suppliers that most effectively interact with the customer among competing suppliers.

Measures and Measure Validation

All measurement scales in this research were measured on seven-point Likert scales. Scales of customer perceived supply market uncertainty (five items) and product complexity (three items) were adopted with some modifications from Han (1991) and Bello and Gilliland (1977) respectively. For the remaining, we developed our own scales. While the construct of a relative procurement volume was measured by a single-item, each of the three relationship-building behaviours was measured by a four-item scale. Three purchasing managers of large Japanese manufacturing firms were contacted to evaluate research instruments prior to the mail survey. Although they did not find any major flaws in the scales, this process resulted in minor modifications in wording.

Prior to a confirmatory factor analysis (CFA) for the examination of internal consistency of each construct, we conducted an analysis of item inter-correlations, item-total correlations, and exploratory factor analysis to assess internal consistency of item scales for each construct. This produced consistent supporting findings. A CFA was performed with the maximum likelihood estimation (MLE) method, using the structural equation modeling program EQS 5.7b which facilitates the following two attractive features: (1) a *robust χ^2 statistic* (the Satorra-Bentler scaled statistics, SCALED χ^2 , and Comparative Fit Index (CFI) corrected by the χ^2 , Robust CFI) that incorporates a scaling correction for the χ^2 statistic when distributional assumptions are violated (Satorra and Bentler 1994); and (2) *robust standard errors* that are correct in large samples even in absence of multivariate normality (Bentler and Dijkstra 1985). When the data is multivariate normal, the scaling correction exerts no effect (Bentler 1995). This makes robust statistics universally applicable model evaluation statistics. We employed the statistics for our model evaluation.

For the ‘relative procurement volume’ construct that was measured by a single item, we set the construct reliability at 0.90 in our model evaluation. After scale cleaning by discarding four items one at a time in light of the multivariate Lagrange Multiplier test statistics, a final measurement model was obtained with seventeen items. Inspection of the statistical property of input data and fit of internal structure indicated a satisfactory model fit: SCALED χ^2 (90, N = 118) = 101.49, $p > 0.19$; Non-Normed Fit Index (NNFI) = 0.99, Robust Comparative Fit Index (RCFI) = 0.99, Root Mean Square Error of Approximation (RMSEA) = 0.037 and (its confidence interval of .000-.063). Standardized pattern coefficients and scale reliabilities supported convergent validity and reliability of all model constructs (Appendix 1). All factors were also found to be distinct from one another. Table 1 presents estimated inter-factor correlations among the six model constructs.

Table 1. Inter-Factor Correlations

	RPV	SMU	PC	RB	AB	IB
RPV	-	.10	.11	.09	.10	.09
SMU	-.25*	-	.11	.10	.10	.10
PC	.14	-.08	-	.11	.09	.10
RB	.24**	-.22*	.15	-	.05	.05
AB	.24*	-.34**	.23*	.70**	-	.06
IB	.28**	-.25*	.22*	.79**	.60**	-

Notes: Entries below the diagonal show estimates of inter-factor correlation between respective factors. Those above the diagonal show their estimated standard errors.

* $p < .05$

** $p < .01$

RPV= Relative Procurement Volume; SMU= Supply Market Uncertainty; PC= Product Complexity; RB= Responding Behaviour; AB= Alerting Behaviour, and IB= Initiating Behaviour

FINDINGS AND DISCUSSION

The measurement model was transformed into a structural model (Figure 1) by incorporating nine hypothesised paths and allowing errors for three supplier behaviours to correlate (ζ_{RB} , ζ_{AB} and ζ_{IB}). The decision to correlate the three errors in the equations was made based on the notion that those constructs share a higher-order factor called 'relationship specific interaction competence' (Miyamoto and Rexha, in press). The model estimation produced the following satisfactory model fit statistics: $\text{SCALED}\chi^2(93, N = 118) = 109.72, p > 0.11$; NNFI = 0.99; RCFI = 0.98; RMSEA = 0.037 (.000-.063). Table 2 presents a summary of standardized estimates of the model parameters.

Table 2. Tests of Hypothesized Relationships

Endogenous Constructs	Exogenous Constructs			R ²
	RPV	SMU	PC	
RB	H1: .19*	H2: -.17	H3: .11	.08
AB	H4: .15	H5: -.30**	H6: .19*	.15
IB	H7: .22*	H8: -.19	H9: .18*	.12

Notes: * $p < .05$

** $p < .01$

For labels, please refer to Table 1.

$\Psi_{RB,AB} = .67^{**}$, $\Psi_{RB,IB} = .76^{**}$, and $\Psi_{AB,IB} = .53^{**}$

Our data supported five of the nine hypotheses at a statistical confidence of greater than 0.95. Firstly, an increase in the relative procurement volume was found to necessitate more active supplier responding ($\beta = 0.19, t = 1.97$) and initiating behaviours ($\beta = 0.22, t = 2.47$). Similarly, an increase in a customer's perceived product complexity was found to require greater supplier alerting ($\beta = 0.19, t = 2.32$) and initiating behaviour (β

= 0.18, $t = 1.99$). On the other hand, as to the effect of a customer's perceived supply market uncertainty on the three supplier behaviours, the study yielded a somewhat confusing finding. Although our study supported the relationship between the context variable and alerting behaviour, it found a negative influence in contrast to our hypothesis ($\beta = -0.30$, $t = -3.07$).

Overall, our research findings support the notion of customer procurement situation-specificities of supplier relationship-building behaviours, but not that of uni-attribute sensitivities of alerting and initiating behaviours as proposed in the SASM model. Firstly, as to responding behaviour, our finding concurs with the SASM framework. In the exchange for the product procured in a larger volume, a supplier is expected to be more responsive. Not only that, such an exchange also necessitates a greater supplier initiative for joint value creation. Demand fluctuation of a customer's end-products or unexpected competitive intensity in the market always commands adjustments (delivery schedule, further cost reduction and quality improvement). In such situations, the customer commonly makes it a priority to facilitate necessary adjustments in larger volume procurements because of their greater impact on the operation. The undertaking of unilateral adjustment in the exchange often creates significant financial and operational burdens. It is for this reason that the customer appreciates a supplier that is willing and able to share and minimize the costs and burdens by *making significant efforts to respond to the customer's request* in such an exchange. On the other hand, the larger procurement volume magnifies a greater potential for the customer's operational and/or strategic gains through a supplier-led value creation. This underscores the importance to the customer of a supplier's initiating behaviour, *proactive interactions in the exchange based on its strong interest in helping the customer become more competitive*. Notably, the observed larger coefficient of initiating behaviour seems to have reflected greater importance of a supplier's proactive role in joint-value creation.

Secondly, greater product complexity perceived by the customer is suggested to make active supplier initiating and alerting behaviours in the relationship more desirable. In the recent resource constrained, competitive business environment, the firm pursues highly selective resource deployment strategies, focusing on carefully defined sets of value-adding activities. In other words, the firm is building and maintaining competencies in highly selective product and process technologies. While offering

substantial opportunities for enhanced operational efficiency and flexibility, such a strategic pursuit makes the firm highly dependent on suppliers whose process and product technologies lie outside its core competencies. Hence, when the customer perceives a product as more complex, it has no choice but to rely on initiating behaviour of those technically and technologically more competent suppliers for superior value creation. Furthermore, a complex product is more likely to be customized with fewer alternative suppliers (Hallen, Johanson and Mohamed 1987). When an unexpected disruption occurs in the sourcing of such a product, the customer faces greater difficulty in meeting the sourcing requirement set by the production department with extra shipments from other in-suppliers and/or locating substitute suppliers in a timely manner. This makes a supplier's alerting behaviour a valuable cooperative behaviour, as it gives the customer more time to respond to the contingency effectively.

Lastly, as to the observed negative relationship between a customer's perceived supply market uncertainty and supplier alerting behaviour, two possible interpretations can be made, differing in interpretation of the direction of the relationship. The first is a straightforward, research output-driven interpretation. That is, a supplier's alerting behaviour becomes less discernible to the customer in the exchange when *the customer has greater difficulty in forecasting changes in the supply market of the product*. Conversely, another interpretation is that it is the supplier behaviour that gives the customer the confidence and ability to forecast the supply market. Although our finding does not offer any basis to favor either of the two, the literature seems to be in favor of the second. Supplier altering behaviour is one of a supplier's cooperative interaction behaviours to support the customer in the exchange relationship (Rexha and Miyamoto 2000), and reflects a supplier's relationship-specific interaction competence (Miyamoto and Rexha in press). The observed high correlations among the three supplier behaviours support these notions. Furthermore, it has been known that effective management of uncertainty surrounding the exchange is one of benefits derived from a successful CBSR (Lyons, Krachenberg and Henke 1990; Rindfleisch and Heide 1997). These collectively make the second interpretation more plausible.

MANAGERIAL IMPLICATIONS

Drawing on results from this study, two important managerial implications can be offered. The first is about procurement situation-specificities of three supplier relationship-building behaviours. As discussed in the preceding sections, a procurement context commands the *when's* of each supplier relationship-building behaviour. In reality, each exchange is unique, comprising of different mixes of the procurement variables. This necessitates careful cross-referencing of the procurement characteristics and the supplier relationship-building behaviours. For instance, two exchange situations require a supplier's active undertaking in all of the three relationship-building behaviours: when the customer views the exchange as part of procurement of a product sourced in a relative large volume and high supply market uncertainty, or a complex product. Here the supplier must be able to distinguish the two situations based on differences in the required relationship-marketing approach. Whereas the first case underscores alerting behaviour as the most important relationship-marketing variable, the second emphasizes initiating behaviour.

Though not as explicit as the above, our findings also suggest the criticality of the supplier's understanding of each customer's specific procurement context. Differences in operational scale and commercial and technological competencies across customers create procurement opportunities and constraints unique to each of them. Decisions on which relationship-building behaviours are appropriate must be made based on how the customer discerns the focal procurement, not on the supplier's own view on it. Therefore, without sufficient understanding of each customer's unique operational and strategic opportunities and constraints associated with the exchange, the supplier can never act and react with the customer in a manner to develop a successful CBSR.

LIMITATIONS AND FUTURE RESEARCH

This study is no exception to any other cross-sectional research inherited with potential limitations. Firstly, some limitations are associated with our data collection method using a single key informant on only one side of the dyad and in a cross-sectional design. The possibility of a common method bias (the selection problem and perceptual agreement problem) resulting from this method is not eliminated. On the other hand, as conventional knowledge, for stronger inferences of causality model research with the

cross-sectional design like the present research, longitudinal studies are needed. This sort of research problem can be tested only with longitudinal research. Secondly, our findings were drawn from a relatively small sample size. A small sample size is often associated with instability of model parameter estimates. While our sample size meets the conventionally recommended minimum sample size of 100 to 150 for the appropriate use of the MLE method in structural equation modeling, it does not give as much confidence in model parameter estimates if the sample sizes were much larger. Though our data supported construct reliability and validity of our own scales, they should be examined further and improved in future studies.

Furthermore, some limitations specific to our research need to be noted. Firstly, we employed the data on primary suppliers only. While serving our purpose, this has most likely minimized variations in the data, diminishing our ability to reflect diversity in supplier interaction behaviours in reality. In addition, our assumption that the primary suppliers be a preferred supplier, which actively engage in cooperative interaction behaviours, might have also introduced some errors in model estimation. As Miyamoto (2001) acknowledges, there are some situations where a partner supplier is rewarded not with the largest business share, but with other incentives and supports. Another is our inability to empirically determine the direction of the relationship between perceived customer supply market uncertainty and supplier alerting behaviour. Although we presented explanations for the observed negative relationship in light of theories, it needs to be verified or rejected empirically. Future research should reexamine the issue by better operationalization of the construct and/or modeling approach. Together with such improvement, future researchers also need to investigate how preferred suppliers differ in performing the three relationship-building behaviours from competing in-suppliers across different procurement contexts. In reality, what always matters is one's relative performance.

CONCLUSION

This study investigated operational validity of the SASM model, or procurement context sensitivities of three supplier relationship-building behaviours, namely responding, alerting and initiating behaviours. While supporting the context variable specificities of each behaviour proposed in the model, it found two additional procurement attribute-

behaviour relationships, such as customer perceived product complexity and alerting behaviour and a relative procurement volume and initiating behaviour. Based on findings on three procurement attributes' influence patterns and magnitudes on the three relationship-building behaviours, we presented some operational guidelines to marketing managers on an appropriate context of each relationship-building behaviour for suppliers' pursuit of a successful CBSR.

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APPENDIX

Measures and Construct Reliabilities

Construct	Measures	<i>SPC</i> ^a	<i>p</i> ^b	<i>AVE</i> ^c
Relative Procurement Volume	Relative to the volume of other purchased inputs, is the volume of the purchase of the Focal Product (Very Low to Very High)?	.90	N/A	N/A
Supply Market Uncertainty	Your firm can easily forecast availability of the supply of the Focal Product.	.83	.89	.74
	Your firm can easily forecast changes in the supply market of the Focal Product.	.93		
	Your firm can predict the nature and extent of changes in the Focal Product very well.	.78		
Product Complexity	The Focal Product is technologically (Unsophisticated vs. Sophisticated).	.79	.90	.74
	The Focal Product is (Non-technical vs. Technical).	.97		
	The Focal Product is (Low vs. High) engineering content.	.82		
Responding Behaviour	This supplier has always made significant efforts to respond to your firm's requests.	.90	.88	.72
	Compared to other suppliers of the Focal Product, this supplier has been more responsive to your firm's problems.	.75		
	This supplier has been very responsive to your firm's requests.	.89		
Alerting Behaviour	This supplier has kept your firm well informed about operational problems that might affect the supply of the Focal Product.	.89	.92	.79
	This supplier has alerted your firm as soon as they detected a sign of possible problems in your firm's Focal Product sourcing.	.93		
	This supplier has been very proactive in informing your firm of any possible changes in their ability to meet your firm's procurement requirements for the Focal Product.	.85		
Initiating Behaviour	Your firm has always enjoyed this supplier's strong initiative to make your firm more competitive.	.89	.87	.70
	This supplier's strong interest in helping your firm become more competitive has made them proactive in dealing with your firm.	.93		
	Building on their technological expertise, this supplier has made valuable suggestions for your firm's new products.	.66		

a. Standardized pattern coefficient

b. Composite reliability computed as $(\sum I)^2 / [(\sum I)^2 + \sum \text{var}(\mathbf{e})]$

c. Average variance extracted computed as $\sum I^2 / (\sum I^2 + \sum \text{var}(\mathbf{e}))$

Notes: All scales were measured on seven-point Likert scales, indicating one as "Strongly Disagree" and seven as "Strongly Agree", except for Relative Procurement Volume and Product Complexity.

