

Measuring boundary spanning behavior

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ABSTRACT

This study develops a theoretical framework and a measurement scale to explore how industrial purchasers interact in supplier relationships. The framework is grounded in recent theoretical developments that consider interaction modes as multidimensional rather than one-dimensional or dichotomous behavioral styles. In an empirical study of 349 industrial purchasers, we validate the measurement and the conceptual arguments of the framework and identify three individual boundary behavior dimensions: hierarchical, competitive and relational.

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1. Introduction

Traditionally, interaction modes in buyer-seller relationships have been investigated through an “or-or” lens highlighting the dominance of one mode and even excluding the simultaneous use of other behavioral types of interaction (Zerbini & Castaldo, 2007). This continuum-based (one-dimensional) thinking has dominated the analysis of inter-organizational relationships manifesting themselves through dichotomies such as transactional and relational relationships (Rinehart, Eckert, Handfield, Page, & Atkin, 2004) or relational and transactional orientation (Pillai & Sharma, 2003). Recent theoretical developments, however, have suggested adopting multidimensional interactions, highlighting the simultaneous appearance of interaction modes (Bengtsson & Kock, 2000; Jap, 1999; Vesalainen & Kohtamäki, 2015; Zerbini & Castaldo, 2007). The present study adopts the new multidimensional perspective and defines three behavioral modes relevant for industrial purchasers by adding “hierarchical” as a third type of interaction. The relevance of the third type of interaction is grounded in general governance theory (Adler, 2001; Bradach & Eccles, 1989) suggesting three independent dimensions of governance: *hierarchical*, *competitive* and *relational*. We assume industrial purchasers to use behavioral logics, which corresponds to these general governance mechanisms at individual level of interaction.

2. Towards A Three-Dimensional Model Of Purchaser Behavior

We conceptualize that in *hierarchical behavior* a purchaser acts on the notion that the relationship is based on a contractual arrangement, which provides the buyer with decision-making authority over certain aspects of the transaction relationship. In the inter-organizational context, *hierarchical behavior* exists when the parties to a relationship try to exercise power over each other. In this

context, power can be defined as the ability of the industrial purchaser to influence the actions of the supplier (Handley & Benton, 2012; Maloni & Benton, 2000). The literature identifies five bases of interfirm power: *reward*, *coercion*, *expert*, *referent*, and *legitimate* power.

Arm's length relationships are typical in industrial business, and a buying firm usually applies the competitive force of the market by requesting competitive bids from multiple suppliers (Dyer & Ouchi, 1993; Krause, Scannel, & Calantone, 2000). By using competitive tactics, industrial purchasers may take advantage of fully developed bidding specifications and short-term contracts to achieve a low purchase price (Krause et al., 2000; Stuart, 1993). Thus the *market-driven behavior* of a buyer is based on the threat of using alternative suppliers, implicitly by signaling such a possibility or by benchmarking the markets by referring to the other firms.

Relational behavior leverage social capital and relational orientation to maintain relationships, in contrast to using the threat of termination (hierarchical enforcement) or maintaining competition (market governance) (Heide, 1994). In relational business relationships exchange partners develop joint values and expectations about “proper and acceptable behavior” (Macneil, 1980, p. 38). Drawing on Macneil's (1980) work, research on business-to-business relationships highlights long-term orientation, role integrity, relational planning, mutuality, solidarity, adaptability, and conflict resolution as the main building blocks for relational behavior (Blois & Ivens, 2006; Ivens, 2004).

The above discussion clearly identifies three behavioral patterns of boundary spanning behavior. Extant research has treated these behaviors as firm-level orientations or governance mechanisms. The present study tries to enlarge the theoretical understanding by addressing individual level behavior and suggesting a three-dimensional boundary spanning behavior model for industrial purchasers.

3. Scale development

3.1 Data collection

The data used to test our conceptualizations and hypotheses consist of Finnish manufacturing firms. In the first phase, we contacted 415 companies to identify the person or persons responsible for purchasing, and then called the nominated people directly to request their assistance with a survey. In the second phase, these companies were contacted again to identify more respondents and additional survey candidates were contacted by phone. The final sample consisted of 349 responses (83% of them being males, average age 40, holding an operational or expert (39%), managerial (46%) or executive (15%) position, and representing firms with more than 50 employees).

3.2 Developing the measure for industrial purchasers' boundary spanning behavior

Inspired by Hinkin (1995) and Churchill (1979), the present research adopted the three-phase scale development procedure to develop a purchaser boundary spanning behavior scale suitable for use in a customer-supplier context. The three phases involved were item generation, scale development, and scale evaluation.

Initially, we generated a considerable number of alternative behavioral items based on the three modes of behavior. A total of 20 items were developed in the first phase. The clarity and practical relevance of the items were tested by asking three practitioners working in sourcing positions to review the first version of the item package. Some minor corrections to wording were made after these tests.

Next, the validity of the chosen scale items was confirmed by an item-sorting process (Hensley, 1999; Hinkin, 1995) that involved ten academic experts reviewing and allocating randomly sorted items into the proposed three dimensions and an "other" category. The

standard procedure suggests that item-wise sorting should produce at least 80% of the correct choices the experts made. Failure to do so would result in an item being reframed or deleted. The item-sorting process used in the present research led to one item being deleted.

To ensure the validity of the scale items, we developed and assessed a content validity index (CVI) to measure the degree to which the instrument covers the content that it should measure. In a content validity test, experts were asked to rate the relevance of each item on a 4-point scale with options of *1 = not relevant*, *2 = somewhat relevant*, *3 = quite relevant*, and *4 = highly relevant* (Polit, Beck, & Owen, 2007). The content validity of the scale was measured by asking ten academic experts to assess if the item measured what it was intended to measure (Yaghmale, 2009). After deleting six items, the content validity index (Average I-CVI) of the scale was calculated, and the value was compared to the threshold value 0.8 (Polit et al., 2007).

In the third stage, data was collected and the measurement instrument was evaluated with quantitative survey data. The items were measured on a 7-point Likert scale anchored with *1 = hardly ever* and *7 = very often*.

4. Analysis and results

To investigate the factor structure of the final scale, rotated principal component analysis was used. Three factors emerged, and the results of the exploratory factor analysis are presented in Table 1. The items connected to the three factors that emerged from the exploratory factor analysis were investigated to elicit meaningful definitions for each of the dimensions. Items that loaded onto the first factor reflected the propensity to collaborate, and this dimension was labeled *relational behavior*. Items that loaded onto the second factor related to the use of customer position; therefore, this dimension was labeled *hierarchical behavior*. Items that loaded onto the third

Table 1. Means, standard deviations, Cronbach's alpha values, and item factor loadings.

CONSTRUCTS AND ITEMS	MEAN	STD. DEV.	FACTOR 1	FACTOR 2	FACTOR 3
Relational behavior (α= 0.77)					
I aim to discover mutually beneficial solutions.	5.85	0.78	0.766		
I aim to see things also from the supplier's point of view and thus search for a mutual solution.	5.50	0.90	0.760		
I avoid searching for the reasons for problems only from the supplier's point of view and aim to examine the situation as a whole.	5.82	0.84	0.725		
I make it known that objectives and means are planned together with suppliers.	5.97	0.79	0.661		
I am open to various points of view and solutions	5.24	0.99	0.654		
Hierarchical behavior (α= 0.72)					
I make it clear to the supplier that neglecting our demands will have consequences.	4.24	1.34		0.757	
I emphasize that we as a client have a right to demand that things are carried out the way we prefer.	4.30	1.27		0.687	
I emphasize that we as a client have a right to receive all the relevant information about the supplier's behavior related to this client relationship.	4.33	1.38		0.686	
I aim to influence the supplier by referring to the know-how of our own company about how operations should be developed.	4.74	1.33		0.586	
I appeal to our official agreements and the sanctions defined in them.	3.61	1.39		0.577	
Competitive behavior (α= 0.74)					
I make it known that we are continuously searching for new accomplished low-cost suppliers to our network.	3.69	1.30			0.815
I highlight that there are low-cost suppliers available on the market.	3.99	1.44			0.813
I explain the importance of continuous cost savings with the tight competitive situation of my company.	5.13	1.34			0.690

Extraction method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization

factor related to the threat of alternative suppliers, market situation, and comparing the focal firm to the other firms in the market. The dimension was labeled *competitive behavior*. All these dimensions exhibit significant factor loadings above the 0.5 limit. The three factors explained 54.7% of the variance in the data. Reliabilities were tested using Cronbach's

alphas. Alphas of all three factors (0.73; 0.71; and 0.76, respectively) exceeded the threshold value of 0.7 and were therefore considered acceptable. An examination of the Kaiser-Meyer Olkin (KMO) measure of sampling adequacy suggested that the sample was factorable (KMO =.81), and the Barlett's test was highly significant.

Table 2. Goodness-of-Fit Statistics.

GOODNESS-OF-FIT STATISTICS	RESULT	GUIDELINE
Normed X ² (X ² /df)	2.19	between 2.0 and 5.0 (Hair et al., 2014)
Comparative fit index (CFI)	0.93	>0.90 (Hair et al., 2014)
Tucker-Lewis	0.91	>0.90 (Hair et al., 2005)
Root mean square error of approximation (RMSEA)	0.058	<0.08 (Hair et al., 2014)
Standardized root mean residual (SRMR)	0.052	<0.08 (Schreiber et al., 2006)

Further, to confirm the measurement model, a confirmatory factor analysis (CFA) was conducted as suggested by Hair, Black, Babin and Anderson (2014). At this stage, no further items had to be removed to improve the model fit. The analysis of fit used Maximum Likelihood estimation. All standardized loadings were statistically significant at the 0.01% level and the loadings were above 0.5. The results of CFA suggest that the measurement model provides a reasonably good fit (see Table 2), and thus it is suitable for further examination.

5. DISCUSSION

Purchasers and other buyer firm’s boundary role persons each execute the buyer firm’s purchasing policy when interacting with suppliers. Deriving from the governance theory, this study developed an individual-level measure of boundary spanning behavior in industrial business-to-business context. To our knowl-

edge, such a combined measure does not exist in extant literature. Usually behavioral styles have been measured one-dimensionally.

As a result, we were able to report a measurement scale that is both valid and reliable in terms of statistical standards. The fact that the developed measure proved a pure three-dimensionality of boundary spanning behavior to exist, opens up several new opportunities for further research. One of the most interesting questions is what kind of behavioral configurations these dimensions create when used to analyze the boundary person’s behavioral style. We also expect the behavioral dimension to have an important position in the mechanisms explaining inter-organizational and network level performance. The validated measure enables, for example, research designs that aim to investigate the role of varying boundary spanning behavior to inter-organizational learning, supplier commitment and supplier-customer trust.

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