



## What factors influence buying center brand sensitivity?

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### ABSTRACT

Building on information processing theory (IPT), this empirical study investigates the factors that drive a buying center's level of sensitivity to brand information. The authors propose that buying center brand sensitivity is related in a curvilinear fashion with purchase importance and purchase complexity, and that these relationships are moderated by several environmental, firm, and product factors. Data provided by 273 organizational buying center members confirm the presence of an inverse U-shaped relationship between purchase importance and brand sensitivity, strengthened in conditions of high brand presence and high end-customer demand. Purchase complexity and brand sensitivity appear to relate in a U-shaped fashion but only in light of the moderating effects of product tangibility. The relationship between purchase complexity and brand sensitivity appears stronger when buying firms are small and have prior contractual ties with their selling partners. These results offer guidance to managers concerning when business-to-business (B2B) brand investments are likely to offer their greatest return.

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Business-to-business (B2B) marketers increasingly use brand-building strategies to enable prospective customers to differentiate confidently and efficiently among the offerings within a competitive set. The success of recent corporate branding campaigns by firms such as BASF, Cisco, General Electric, IBM, UPS and many others suggest that B2B marketers who are willing to invest in their brands are rewarded with enhanced reputations and improved financial performance (Lamons, 2005; Rao, Agarwal, & Hahlhoff, 2004).

Unfortunately, B2B branding has not received the same level of attention as a research topic as business-to-consumer (B2C) branding within marketing literature (Mudambi, 2002); perhaps because classic organizational buying models (Sheth, 1973; Webster & Wind, 1972) tend to portray buyers as “rational” decision makers who rely primarily on objective attributes when making product choice decisions. This so-called rational view of organizational buyer decision making has not allowed a significant role for the subjective or self-expressive benefits often associated with brands (Wilson, 2000).

Despite this initial neglect, B2B branding phenomena have begun to receive increased attention from marketing scholars (e.g., Low & Blois, 2002; Mudambi, 2002). In general, extant research finds that brand information does indeed influence decision making in business markets.

Precisely, B2B brands offer cues that can improve information processing efficiency, reduce risk perceptions, and simplify product selection (Gordon, Calantone, & di Benedetto, 1993; Keller, 2003; Kotler & Pfoertsch, 2006; Zablah, Brown, & Donthu, 2010). Such brand cues influence the decision process by communicating information about the product offering and the overall experience a customer might expect with a seller.

Although studies thus establish that brands influence decision making in business markets, they do not offer much insight as to *when* they are most influential. This is an important omission because B2B brands may not be equally important to all sellers, all buyers, or in all purchase situations. To understand when brand information matters most in business markets, this study asks and empirically investigates the following research question: What factors determine the extent to which brand information influences organizational buying deliberations? An understanding of when brands are most likely to influence organizational buying decisions is critical to determining whether substantial investments in brand development may result in desirable market and financial performance outcomes. Moreover, by examining when brand information is likely to permeate and alter the group decision process, we address calls to extend knowledge about buying group decision-making (Marketing Science Institute, 2008).

To develop a better understanding of when brands are most likely to influence organizational buying decisions, we build on information processing theory (IPT) to establish a conceptual model that posits curvilinear relationships between brand sensitivity—that is, the extent to which organizational buying deliberations actively include a consideration of brand information (Kapferer & Laurent, 1988;

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Zablah et al., 2010)—and two critical purchase characteristics, purchase importance and purchase complexity.<sup>4</sup> Our model also considers how these proposed curvilinear relationships may be influenced by key environmental (brand presence, end-customer demand), firm (company size, contractual ties), and product (tangibility) factors.

The remainder of this article is organized as follows: First, we offer a brief discussion of the theoretical differences between business and consumer branding. Second, we review relevant literature and thereby introduce our conceptual model and hypotheses. Third, we discuss our methodology, including the measures and analytical procedures. Fourth, we present the results of our hypotheses tests, and we conclude by discussing the study's results, managerial implications, limitations, and avenues for further research.

## 1. Branding in business versus consumer markets

Although consumer branding principles might apply to business markets, several factors strongly suggest that brand information plays very different roles in business markets (Bengtsson & Servais, 2005; Brown, Bellenger, & Johnston, 2007). The group decision-making process, nature of market demand (i.e., end-customer demand), and the more relationship-oriented promotional approach of B2B marketing suggest a reduced role for brands relative to consumer marketing contexts (Zablah et al., 2010). Consequently, a consumer-dominant approach to branding may offer some meaningful insights for B2B marketing managers, but it is apparent that a dedicated exploration of B2B branding topics that considers these and other complexities associated with organizational buying is warranted.

## 2. Conceptual framework

Few marketing studies examine information processing dynamics and their effects on organizational decision making (Low & Mohr, 2001; Moorman, 1995). Yet organizational (e.g., Galbraith, 1974; Payne, 1976) and consumer (e.g., Bettman, 1979; Chaiken, 1980; Petty, Cacioppo, & Schumann, 1983) information processing theories provide a useful framework for understanding group buying decisions and examining the conditions that may lead buyers to use various decision criteria including those instances in which brand information may be a factor in decision making. Dean and Sharfman (1993) acknowledge that relatively little is known about why some group decisions seem to involve a more structured collection and analysis of information compared with others. According to IPT, not all decision processes involve objective information; instead they often involve the use of judgment, experience, and other less rational factors. Moreover, people are limited by their “bounded rationality” (Cyert & March, 1963). That is, IPT recognizes that information processing can be overwhelming to the point where it exceeds decision makers' processing capacities (Moorman, 1995; Ronchetto, Hutt, & Reingen, 1989; Siggelkow & Rivkin, 2005; Tushman & Nadler, 1978). Past a capacity threshold, decision makers adopt various shortcuts and decision heuristics, including heavily weighing brand information or the reputation of market leaders, to reduce their cognitive strain and risk perceptions (e.g., Anderson, Chu, & Weitz, 1987; Galbraith, 1974; Payne, 1976).

We present an IPT-based conceptual model of the determinants of buying center brand sensitivity in business markets. In “perfect” organizational environments, buying groups process all available

information and willingly exert the effort to analyze alternatives rationally. However, we argue that organizational buying is an imperfect process in which buying center members employ heuristic-based evaluation strategies, often times based on brand cues, in order to minimize the amount of effort needed to arrive at a choice decision. We further posit that buying center members are likely to actively consider brand information more or less depending on the nature of the purchase situation, various environmental and firm factors, and their individual information processing constraints (Keller & Staelin, 1987; Maltz & Kohli, 1996). As we illustrate in Fig. 1, the model proposes that buying center sensitivity to brand information relates in a curvilinear fashion to purchase importance and purchase complexity. Moreover, these curvilinear relationships may be moderated by environmental, firm and product characteristics.

### 2.1. Brand sensitivity

Theories of brand management generally contend that brand information: (1) facilitates the identification of products, services and businesses, (2) communicates their benefits and value, and (3) reduces the risk and complexity of the buying decision (Kotler & Pfoertsch, 2006). Strong B2B brands can be of particular value because organizations and individuals seek to mitigate the heightened risk and uncertainty inherent in certain B2B buying contexts (Homburg, Klarmann, & Schmitt, 2010; Webster & Keller, 2004). This suggests that, in some instances, buying groups are likely to be more sensitive to brand information than in others. On the basis of prior research (Hutton, 1997; Kapferer & Laurent, 1988; Zablah et al., 2010), we define brand sensitivity as the degree to which brand information and/or corporate associations get actively considered in organizational buying deliberations. Brand sensitivity provides the key outcome variable for this study because we focus on understanding *when* brands are most likely to influence the organizational buying process. Given this objective, it was essential that our focal measure capture the degree to which organizational members integrate brand information into the decision process. Other commonly employed brand constructs, brand equity, brand image, and brand loyalty, for example, do not necessarily fully account for the extent of influence of brand information on the decision-making process (Zablah et al., 2010).

### 2.2. Role of purchase importance and purchase complexity

The relationship among purchase importance, purchase complexity, and risk is widely studied in organizational buying literature (e.g., Johnston & Lewin, 1994; Robinson, Faris, & Wind, 1967). To manage the buying risks inherent in important and complex purchases, organizations tend to establish informal communication networks whose purpose is to identify and process information relevant to the purchase decision (Johnston & Bonoma, 1981; McQuiston, 1989). Consistent with this view, IPT suggests that risky and uncertain decisions (i.e., important and/or complex decisions) involve the collection and analysis of information relevant to the decision process (Dean & Sharfman, 1993; Galbraith, 1974). Consequently, when considered within an IPT framework purchase importance and purchase complexity should be critical determinants of a buying center's level of brand sensitivity.

Purchase importance refers to the buying center's perception of the relative impact of the product purchase as it relates to business objectives (Cannon & Perreault, 1999). At the lowest levels of importance, buying center members may use brand information as a choice heuristic (Chaiken, 1980; Petty et al., 1983) because brands seem to provide a reasonably accurate assessment of the alternatives but require less information processing effort. However, because of the minimal importance of the purchase, risk should be lower, so other informational factors (e.g., price or logistics and distribution) likely receive consideration. As a purchase moves to moderate levels

<sup>4</sup> We do not consider purchase novelty. Hawes and Barnhouse (1987) suggest that modified rebuy tasks give buyers a sense of perceived risk and autonomy, whereas individual buying center members suffer a reduced level of authority in novel purchase situations. Because this study seeks the perspectives of purchasing managers and other buying center representatives in contexts in which they believe they have a reasonable level of influence, a modified rebuy context appears most relevant, precluding the inclusion of purchase novelty.

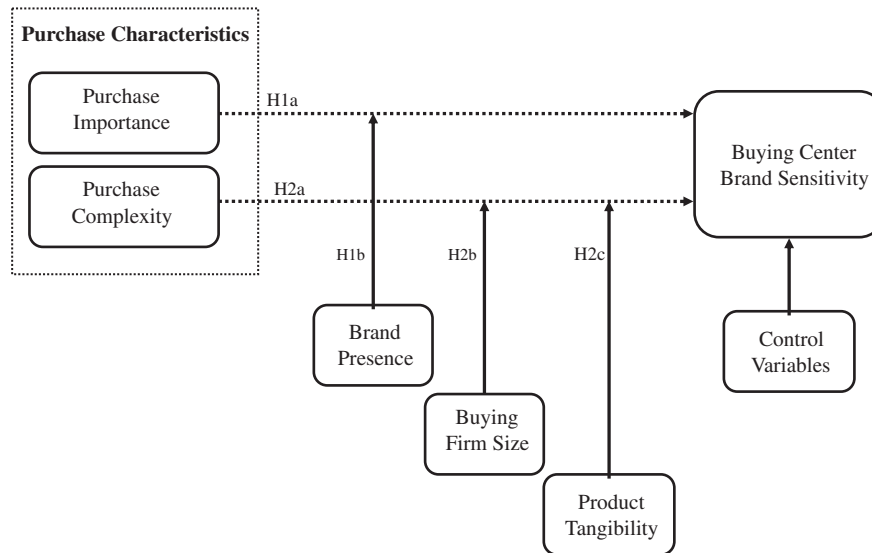


Fig. 1. Conceptual model. Notes: Dashed lines indicate curvilinear effects.

of importance, risk increases, and the relative importance of brand information should also increase as a risk reduction mechanism.

Ultimately, at higher levels of purchase importance, brand information will not suffice as a risk-reduction mechanism. Though buying centers still likely consider brand information when the purchase is highly important,<sup>5</sup> their *relative* use of brand information for decision-making purposes should decline because other information factors (e.g., product functionality, total cost, service and logistical support) come into play. At high levels of purchase importance, we posit that the relative influence of brand information decreases because the intensity of information search increases, prompting greater focus on those factors deemed to reflect the most important attributes (Hansen & Helgeson, 1996). Thus, we propose a nonlinear relationship between purchase importance and brand sensitivity that slopes upward when purchase importance moves from low to moderate levels and downward as importance increases from moderate to high levels.

**H1a.** Purchase importance and brand sensitivity exhibit an inverse U-shaped relationship such that brand sensitivity rises over low to moderate levels of purchase importance and decreases over moderate to high levels of purchase importance.

We define purchase complexity as the buying center's perception of the relative level of sophistication or elaborateness of the product being considered. Complex product purchases suffer from ambiguity and uncertainty (Cannon & Perreault, 1999), and IPT suggests that as uncertainty increases, the "procedural rationality of decision making" also increases until information overload occurs, at which point more simplistic decision-making processes get invoked (Dean & Sharfman, 1993). That is, once information processing becomes overwhelming, buyers tend to adopt strategies that reduce or limit the information they must process by resorting to choice simplification heuristics, such as brand cues, that can reduce the number of alternatives to evaluate (Anderson et al., 1987; Galbraith, 1974; Payne, 1976).

This discussion implies that at low levels of complexity, when information processing is still manageable, decision makers consider

<sup>5</sup> As one of our anonymous reviewers suggested, the importance of relational ties will also increase as purchase importance rises from moderate to high levels. To a certain extent, brands serve to reinforce or strengthen the relationship and hence should have some effect on the decision. This assertion is consistent with our proposition that the relative influence of brands declines as purchase importance moves from moderate to high levels but that brands still influence the decision process.

brand information as one of several informational factors in their decision process. As complexity rises from low to moderate levels, IPT suggests that more structured and comprehensive decision making increases, leading decision makers to seek out more information to deal with the added complexity of the choice situation. At moderate levels of complexity, objective, non-brand factors should exert a relatively stronger influence on the purchase decision than they do at low levels of complexity, which may result in a negative relationship between purchase complexity and brand sensitivity in the low to moderate purchase complexity range. Conversely, when purchase complexity rises to its highest levels, decision makers should disproportionately rely on brand attributes over other more objective information as a way of managing their informational overload. This disproportional weighting of brand information should produce a positive relationship between purchase complexity and brand sensitivity over the moderate to high purchase complexity range. Thus, we propose a nonlinear relationship between purchase complexity and brand sensitivity that slopes downward as purchase complexity moves from low to moderate levels and upward as it moves from moderate to high levels.

**H2a.** Purchase complexity and brand sensitivity exhibit a U-shaped relationship such that brand sensitivity decreases over low to moderate levels of purchase complexity and increases over moderate to high levels of purchase complexity.

### 2.3. Moderators of the purchase characteristics–brand sensitivity relationship<sup>6</sup>

#### 2.3.1. Brand presence

We define brand presence as the number of major brands available in a given product category or business domain (Seiders, Voss, Grewal, & Godfrey, 2005). Prior research suggests that the number of brands available for consideration in a firm's competitive environment may affect the extent to which buyers refer to brand information in their decision process (i.e., the greater the number of brands available, the higher the likelihood that brand information will be considered;

<sup>6</sup> The proposed moderators may exert direct effects on brand sensitivity as well. However, to simplify the development of our manuscript, we focus on moderation arguments only. Nonetheless, our analytical strategy (which includes main effects and product terms) fully accounts for any main effects of the moderators on the dependent variable.

Lehmann & Pan, 1994). We propose that the strength of the relationship between purchase importance and brand sensitivity increases in conditions of high brand presence because the relative diagnostic value of brand information (compared with other informational factors) increases. That is, brand information should be more useful as a means of discriminating among suppliers when brand presence is higher thus strengthening the purchase importance–brand sensitivity relationship.

**H1b.** Brand presence strengthens the positive relationship between purchase importance and brand sensitivity (i.e., the linear term) and weakens the negative relationship between purchase importance and brand sensitivity (i.e., the quadratic term).

### 2.3.2. Firm size

We use the term “firm size” to refer to the number of employees in an organization. Organizational size relates negatively to the comprehensiveness of strategic decision processes and procedural rationality (Pelham & Wilson, 1996), both of which are indicators of the purchasing organization’s professionalism. Because of their limited resources, and capabilities, smaller firms generally lack the mechanisms to collect and analyze substantial amounts of information efficiently (Tihanyi & Thomas, 2005). These findings suggest that when compared with their larger counterparts, smaller firms are more likely to use relatively informal selection choice rules and decision procedures and rely more heavily on brand information to alleviate the information processing demands associated with complex purchases. Therefore, firm size should moderate the purchase complexity–brand sensitivity relationship, such that the relationship is stronger among smaller firms.

**H2b.** The negative relationship between purchase complexity and brand sensitivity (i.e., the linear term) is weaker when firms are small (as opposed to large), and the positive relationship between purchase complexity and brand sensitivity (i.e., the quadratic term) is stronger when firms are small (as opposed to large).

### 2.3.3. Product tangibility

We define product tangibility as the extent to which a product is mentally accessible or imaginable to members of the buying center (Laroche, Bergeron, & Goutaland, 2001). Organizational buying scholars conceptualize B2B products as comprised of tangible and intangible bundles of attributes. The tangible attributes generally include the product, price, and various functional specifications, whereas intangible attributes include the associated services (McQuiston, 2004; Mudambi, Doyle, & Wong, 1997). Buyers are likely to place less emphasis on brand information when evaluating tangible-dominant offerings. That is, when the product being evaluated is more tangible (as opposed to intangible) in nature, buying center members may rely less on brand information for decision-making purposes, because their product-related uncertainty already is low. For intangible-dominant offerings, the mental inaccessibility of the product augments the complexity associated with the purchase. Therefore, for tangible-dominant products, the relationship between purchase complexity and brand sensitivity should be weaker. More precisely, we posit that brand sensitivity decreases when purchase situations are complex and products are more tangible, because these conditions offset the effects of the relative weighting that brand information receives in decision making. In contrast, a greater emphasis on brand information should occur when the purchase situation is complex and the product being evaluated is dominated by intangible features.

**H2c.** The negative relationship between purchase complexity and brand sensitivity (i.e., the linear term) is weaker when products are tangible-dominant (as opposed to intangible-dominant), and the positive relationship between purchase complexity and brand sensitivity (i.e., the quadratic term) is stronger when products are tangible dominant (as opposed to intangible dominant).

## 2.4. Control variables

We included several control variables in our analyses to allow for correct model estimation. Specifically, in an attempt to achieve the most adequate test of the proposed model, we include key individual (i.e., individual risk propensity, level of purchase involvement and job level), firm (i.e., procedural control and cost orientation), exchange (i.e., contractual ties) and market (end customer demand) characteristic variables in the empirical analyses for control purposes.

## 3. Methodology

### 3.1. Survey pretest

We developed and pretested a field survey using 60 respondents from ResearchNow, an industry leader in online business panels. The primary objective of this phase was to explore the viability of different measures for our study constructs and assess the adequacy of the data collection process and sample. Midlevel and executive managers who described their current functional role as involving procurement and those who were decision makers and/or influencers in purchasing raw materials/components at their respective companies could participate in the study.

The pretest data indicate that, despite some problematic items, the measures evaluated are appropriate for use in the main study because they exceed established validity and reliability criteria. We made minor modifications to the problematic items to improve their clarity. Furthermore, our analysis of the demographic and background characteristics of the pretest panelists suggests that the sample comes from the population of interest. Therefore, we employed the online panel for the main study data collection effort as well (pre-test panelists were excluded from participation in the main study).

### 3.2. Data collection and sample

We undertook a field survey of business managers and executives from the same panel to test the proposed model and hypotheses. Panel members recruited for the study were required to meet the same parameters as specified in the pretest. We instructed the respondents to contemplate a recent work situation in which they were part of a buying team or committee responsible for selecting or recommending a particular product for their business. To best capture the group buying process, respondents were asked to keep only one actual buying situation in mind and report on the views represented by that particular buying team (Doney & Cannon, 1997 use a similar approach). We also specified several criteria for the focal purchase scenarios. These selection criteria are considered necessary in this organizational research context in that they are most likely to exclude consideration of items which are not relevant or industrial in nature (Newall, 1977). More specifically, respondents reported on situations that involved: (1) typical business market products including the purchase of materials/parts (e.g., raw materials, ingredients, manufactured materials, parts), capital items (e.g., equipment used in production/operations), or operating supplies (e.g., repair/maintenance items) (Hutt & Speh, 2007); (2) a change in the product purchased or a change in the source of supply or both (i.e., a modified rebuy situation); and (3) a “fairly expensive” product.

To elaborate further, this research focuses on modified rebuy situations because, unlike novel or straight rebuy situations, these tend to involve a balance between sufficiently high buyer risk and buyer autonomy. Buyers tend to have their greatest influence in straight rebuy purchase situations, but these situations are perceived to have little risk; buyers tend to have limited influence in riskier, new task situations. The benefit of the modified rebuy scenario is that “these buying situations provide considerable buyer autonomy while generating considerably more perceived risk” (Hawes & Barnhouse,

**Table 1**  
Construct properties and correlations.

Construct	Mean	S.D.	AVE	LSV	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Brand sensitivity	4.67	1.75	81%	17%	<b>0.93</b>												
2. Purchase importance	5.20	1.40	82%	21%	0.22	<b>0.95</b>											
3. Purchase complexity	3.97	1.50	65%	10%	0.01	0.31	<b>0.88</b>										
4. Brand presence	BI	BI	BI	BI	0.40	0.18	−0.04	–									
5. End-customer demand	2.92	1.33	SI	SI	0.27	0.18	−0.08	0.12	–								
6. Firm size	BI	BI	BI	BI	−0.23	−0.15	0.18	−0.05	−0.16	–							
7. Contractual ties	BI	BI	BI	BI	0.09	0.12	−0.13	0.02	0.10	−0.68	–						
8. Product tangibility	5.40	1.42	77%	21%	0.41	0.46	−0.05	0.18	0.23	−0.17	0.17	<b>0.94</b>					
9. Individual risk propensity	5.06	1.36	62%	18%	0.34	0.41	0.21	0.19	0.18	−0.07	0.00	0.42	<b>0.83</b>				
10. Job level	3.17	1.83	SI	SI	−0.19	−0.15	0.13	0.03	−0.03	0.84	−0.52	−0.14	0.02	–			
11. Purchase involvement	3.88	1.16	SI	SI	0.28	0.32	−0.02	0.17	0.14	−0.46	0.27	0.37	0.21	−0.43	–		
12. Procedural control	4.43	1.62	75%	8%	0.19	0.27	0.00	0.19	0.25	0.06	−0.02	0.24	0.28	0.11	0.08	<b>0.92</b>	
13. Cost orientation	3.45	1.48	77%	6%	0.04	0.00	0.18	−0.15	0.08	0.24	−0.11	0.01	0.04	0.17	−0.07	0.12	<b>0.91</b>

Notes: S.D. = standard deviation. AVE = average variance extracted. LSV = largest shared variance. BI = binary variable. SI = single-item construct. Entries below the diagonal of the correlation matrix are construct correlations. Polychoric correlations are reported for the association between binary and continuous variables. Polychoric correlations are reported for the association between two binary variables. Composite reliabilities are shown in bold on the correlation matrix diagonal. Correlations greater than or equal to |.12| are statistically significant ( $p < .05$ , two-tailed test).  $n = 273$ .

1987; p. 289). As such, the modified rebuy context is one that has been frequently used in organizational buying research (e.g., Newall, 1977; Puto, Patton, & King, 1985; Zablah et al., 2010). We encouraged the consideration of “fairly expensive” products to limit the purchase situations to those for which brand information is likely to play some role in the purchase evaluation. These mid-range purchases tend to fall between trivial, commodity-type purchases, which are more influenced by price, and major capital investments (e.g., infrastructure for a national telecom system), which may be influenced more by politics and have significant socioeconomic consequences. In this middle territory, risk is considered high enough to prevent decisions dominated by price, yet the consequences of the decisions are not so severe as to have an overly deleterious impact on the company or its stakeholders (Minett, 2002).

The data collection effort yielded a total of 314 responses. Of those, we discarded 41 because of either excessive missing data or obvious answer patterns. Excluding these surveys from the sample resulted in a total of 273 usable questionnaires. To assess nonresponse bias, we compared the responses from early and late responders, but they did not differ across any of the constructs tested. Thus, nonresponse bias does not appear to be a serious concern in our study (Armstrong & Overton, 1977).

### 3.3. Respondent characteristics

The sample is almost evenly split between men and women, with a slight majority (55%) of men. They represent a variety of age groups; approximately 75% of respondents self-selected into age categories between 25 and 54 years. Most of the respondents described themselves as white (76.4%) and college graduates (77%, including undergraduate and postgraduate degrees). A majority (51%) of respondents also reported being employed with their current company for more than six years and earning annual salaries of less than \$100,000 (56%). Finally, respondents reported being employed primarily in services and manufacturing organizations that varied in terms of the number of employees and dollar sales (e.g., 47% employ fewer than 100 people, and 53% have more than 100 employees; 37% earn less than \$1 million in yearly sales, and 18% report company sales of more than \$1 billion).

### 3.4. Construct measures

#### 3.4.1. Dependent variable

We measure brand sensitivity using a three-item scale adapted from prior research (Kapferer & Laurent, 1988). The items, anchored on a seven-point “strongly disagree” to “strongly agree” scale, generally asked respondents to indicate the extent to which they

considered brand information in their decision-making process. The scale exhibits adequate levels of internal consistency reliability ( $\alpha = .92$ ). In Table 1, we report the means, standard deviations, and other relevant construct properties and correlations for each measure. We also provide a list of all the measurement items used in the study in the Appendix.

#### 3.4.2. Independent variables

Respondents assessed purchase importance and purchase complexity using four-item semantic differential scales taken from Cannon and Perreault (1999). The instructions asked them to compare their focal product with other products that their firm had purchased in terms of its importance and complexity. This step ensured that the measures would capture the importance and complexity of that purchase to the particular firm, and allowed for the possibility that the purchase of the same item might entail different levels of perceived importance and complexity across firms. The coefficient alphas for the purchase importance and purchase complexity scales are .95 and .87, respectively.

#### 3.4.3. Moderating variables

We measure brand presence using a four-category nominal scale on which respondents indicate the number of major brands present in their supplier environment. Responses from the four categories were collapsed into two categories to create a binary variable for model estimation purposes, where 0 = no major brands and 1 = many major brands. Similarly, we measured firm size with a multi-category nominal question, collapsed to create binary dummy variables for the analysis. The number of employees in the firm (0 = less than 100, 1 = more than 100) provides a measure of firm size.<sup>7</sup> Finally, we measured product tangibility with a five-item; strongly disagree–strongly agree scale taken from Laroche et al. (2001), which provides a coefficient alpha of .94.

#### 3.4.4. Control variables

Risk propensity employs a three-item scale taken from Donthu and Gilliland (1996), on which respondents indicated their level of risk aversion on a seven-point scale ( $\alpha = .84$ ). Purchasing involvement

<sup>7</sup> We did not consider it appropriate to treat the multi-category nominal questions used to gauge competitive intensity and firm size as continuous or interval-scaled measures. For that reason, and to facilitate model estimation, we used binary-coded variables to represent these constructs. Moreover, the use of a multi-group procedure to test for the moderating effects of these nominally-scaled variables is not desirable in this case given the large number of categories for each variable and the possibility that the moderators have direct effects on the dependent variable. We note, however, that sensitivity analyses suggest that our use of binary-coded measures did not have a substantive impact on our study results.

used a five-point Likert-type item (1 = rarely involved, 5 = always involved); respondents indicated the extent to which they are involved in procurement for their firm. To measure job level, we asked respondents to indicate how many levels separated them from the chief executive in their firm. End-customer demand was measured using a five-point Likert-type scale (1 = no consumer demand, 5 = high consumer demand), on which respondents indicated the extent to which end-consumers demand the product they selected. To assess contractual ties, we asked respondents if the chosen supplier had a contract in place with their company. If a prior contract was in place and/or a contract extension resulted, responses were coded as 0; if no type of contractual tie was in place, the response was coded as 1. Finally, we measured procedural control and cost orientation on seven-point, strongly disagree to strongly agree, multi-item scales. The procedural control measure, taken from Hunter, Bunn, and Perreault (2006), achieves a coefficient alpha of .92. We developed the cost orientation measure for this study. It attains a coefficient alpha of .91.

### 3.5. Confirmatory factor analysis

We subjected the seven multi-item scales to a confirmatory factor analysis (CFA) using *Mplus 5.1* (the analysis included a combined total of 26 measurement items). The CFA results suggest that the model provides a good fit to the data (Hu & Bentler, 1999) ( $\chi^2 = 577.5$ , 278 d.f.,  $p < .01$ ; comparative fit index [CFI] = .94; standardized root mean squared residual [SRMR] = .055; root mean squared error of approximation [RMSEA] = .066). The good fit of the measurement model and a detailed evaluation of CFA model residuals support the fundamental assumption of unidimensional measurement (Anderson & Gerbing, 1988).

As we summarize in Table 1, additional evidence provided by or derived from the CFA indicates that the measures are reliable and valid, including the scales' high composite reliabilities (ranging from .83 to .95) and average variances extracted (AVE) (ranging from 62% to 82%) (Fornell & Larcker, 1981; Gerbing & Anderson, 1988). We obtain evidence of the measures' convergent validity from the factor loadings, which are all significant, and the scales' high levels of internal consistency (Anderson & Gerbing, 1988; Fornell & Larcker, 1981). Finally, the AVE for each construct offers evidence of the measures' discriminant validity, because the lowest AVE (65%) is substantially greater than the largest shared variance between any of the constructs in the model (largest shared variance = 21%; Fornell & Larcker, 1981).

## 4. Analysis and results

We estimate three separate models (A, B and C) using robust maximum likelihood regression in *Mplus 5.1* to examine the interplay between the variables in our study. Model A was specified as a baseline model that includes the regression of brand sensitivity on purchase importance, purchase complexity, the quadratic terms (i.e., purchase importance squared, purchase complexity squared), the moderating variables (main effects only), and the control variables. In Model B, we introduce the product terms for the proposed interactions, including product terms for the linear purchase importance and purchase complexity effects (e.g., purchase importance  $\times$  brand presence) and for the quadratic purchase importance and purchase complexity effects (e.g., purchase importance squared  $\times$  brand presence). Finally, Model C reports the results of a post-hoc model estimated using additional (exploratory) moderators, as discussed in the Post-hoc analyses section. All variables were standardized to enhance interpretation ease. In Table 2, we offer a detailed listing of the terms included in each model.

As we also summarize in Table 2, the baseline main effects and quadratic terms model accounts for 34% of the variance in brand sensitivity. Model B, which includes the linear and quadratic interaction terms, accounts for an additional 4% of the variance in

**Table 2**  
Predictors of buying center brand sensitivity.

Predictors	Baseline model (A)	Full model (B)	Post-hoc model (C)
<b>Main effects</b>			
Purchase importance (PI)	-.17*	-.19**	-.18**
Purchase complexity (PC)	.03	.04	.04
Brand presence (BP)	.25**	.24**	.25**
Firm size (FS)	-.05	-.06	-.04
Product tangibility (TA)	.26**	.35**	.37**
<b>Quadratic terms</b>			
PI $\times$ PI (PISQ)	-.14*	-.20**	-.16*
PC $\times$ PC (PCSQ)	.05	.07	.04
<b>Linear interactions</b>			
PI $\times$ BP		.15*	.14*
PC $\times$ FS		-.12*	-.18**
PC $\times$ TA		-.05	-.06
<b>Quadratic interactions</b>			
PISQ $\times$ BP		.02	.01
PCSQ $\times$ FS		-.01	-.03
PCSQ $\times$ TA		-.13*	-.19*
<b>Control variables</b>			
Risk propensity	.18*	.18*	.16*
Job level	-.17*	-.17*	-.17*
Purchase involvement	.06	.08	.07
Procedural control	.04	.06	.06
Cost orientation	.06	.09	.09
End customer demand (ED)	.15*	.15*	.03
Contractual ties (CT)	-.08	-.08	-.07
<b>Exploratory interactions</b>			
PI $\times$ ED			.15*
PISQ $\times$ ED			.14
PC $\times$ CT			-.14*
PCSQ $\times$ CT			.03
R <sup>2</sup>	34%	38%	41%
Parameters estimated	16	22	26
Akaike information criterion	10,745	14,532	16,757
Bayesian information criterion	10,803	14,610	16,850

Notes: All variables have been standardized.

\*  $p < .05$ .

\*\*  $p < .01$ .

brand sensitivity, for a total of 38% variance explained. The effect sizes for the significant interactions are consistent with prior studies (see McClelland & Judd, 1993) and the incremental variance explained in Model B over Model A is statistically significant ( $p < .01$ ). The results pertaining to the individual hypotheses appear in Table 3.

### 4.1. Purchase importance hypotheses

We posited ( $H_{1a}$ ) that purchase importance and brand sensitivity would be related in an inverse U-shaped fashion, such that brand sensitivity would increase over the lowest levels of purchase importance and then decrease as purchase importance reached its highest levels. The data generally support this expectation; the coefficients for the linear ( $b = -.18$ ,  $p < .01$ ) and quadratic ( $b = -.16$ ,  $p < .05$ ) terms are significant in all the estimated models.<sup>8</sup> However, as we illustrate in Fig. 2, Panel a,<sup>9</sup> the increase in brand sensitivity over the low to moderate range is very modest, whereas the decline at the highest levels of purchase importance is sharp and falls to levels lower than when purchase importance is at its lowest levels.

<sup>8</sup> Although the relationship is positive for the lowest levels of purchase importance, the sign of the linear purchase importance coefficient is negative, because we standardized the variables for model estimation purposes (i.e., once standardized, low purchase importance values became negative). Multiplying a negative coefficient by a negative standardized value for purchase importance results in a positive number or higher brand sensitivity (thus the positive relationship). We depict the nature of the relationship graphically in Fig. 2, Panel a.

<sup>9</sup> We generated the figures that depict the proposed relationships, as recommended by Aiken and West (1991).

**Table 3**  
Summary of hypotheses tests.

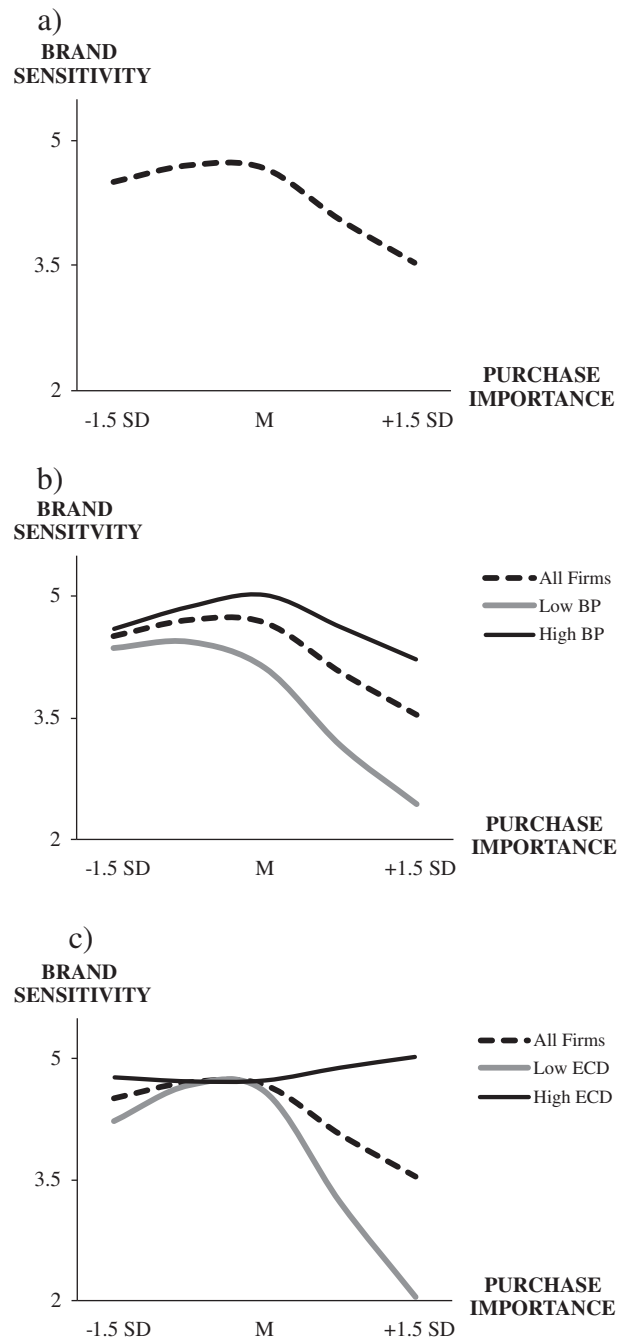
Hypothesis	Relationship	Supported?	Description
H <sub>1a</sub>	Inverse U-shaped relationship between purchase importance and brand sensitivity	Yes	Brand sensitivity modestly rises over the lowest levels of purchase importance and declines sharply as it reaches moderate to high levels of purchase importance.
H <sub>2a</sub>	U-shaped relationship between purchase complexity and brand sensitivity	No	A U-shaped relationship between purchase complexity and brand sensitivity is generally not evident (see H <sub>2c</sub> results for an exception).
H <sub>1b</sub>	Brand presence as moderator of the purchase importance–brand sensitivity relationship	Yes	The purchase importance–brand sensitivity relationship is stronger in conditions of high brand presence.
H <sub>2b</sub>	Firm size as moderator of the purchase complexity–brand sensitivity relationship	Yes	Purchase complexity and brand sensitivity are positively related when firms are small and unrelated when firms are large.
H <sub>2c</sub>	Product tangibility as moderator of the purchase complexity–brand sensitivity relationship	Yes	The relationship between purchase complexity and brand sensitivity is U-shaped when products are intangible-dominant. The relationship is in the form of an inverted U-shape when products are tangible-dominant.
PH	End-customer demand as moderator of the purchase importance–brand sensitivity relationship	Yes	The purchase importance–brand sensitivity relationship is stronger in conditions of high end-customer demand.
PH	Contractual ties as moderator of the purchase complexity–brand sensitivity relationship	Yes	Purchase complexity and brand sensitivity are positively related when contractual ties are present and unrelated when contractual ties are absent.

Notes: PH = Relationship examined in a post-hoc fashion.

We also predicted that the relationship between purchase importance and brand sensitivity would be stronger when brand presence was high. The data support H<sub>1b</sub>, because the linear interaction term between purchase importance and brand presence is significant and positive ( $b = .14, p < .05$ ). That is, the purchase importance–brand sensitivity relationship at the lowest levels of purchase importance is stronger when brand presence is high. However, the quadratic interaction term (purchase importance squared  $\times$  brand presence) is not significant ( $p > .05$ ), so the rate of decline of the relationship does not appear to be moderated by the brand presence level. We depict the moderating role of brand presence in Fig. 2, Panel b, which reveals that brand sensitivity rises more quickly as a function of purchase importance when brand presence is high. This figure also shows that though the rate of decline of the relationship is unaffected by the brand presence of the environment, the mean levels of brand sensitivity at the highest level of purchase importance are greater when brand presence is higher, because of the linear interaction between purchase importance and brand presence.

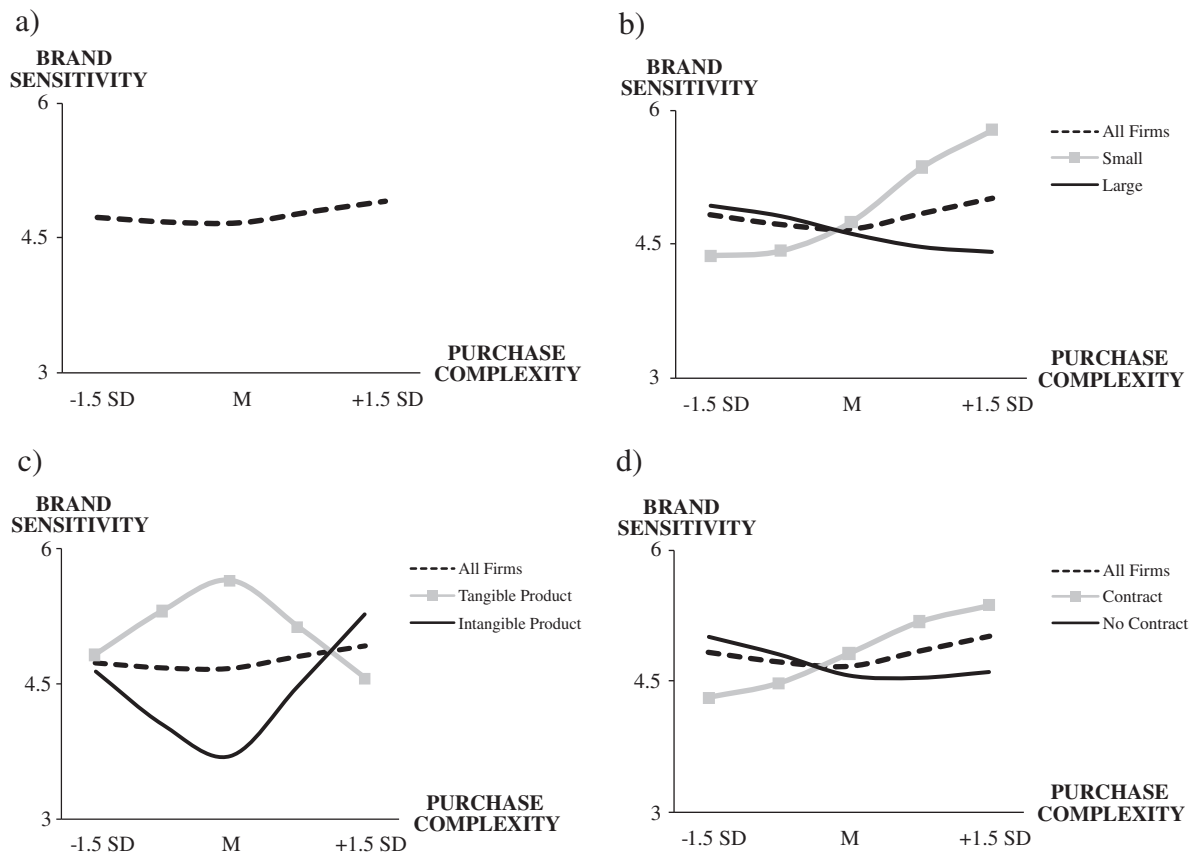
#### 4.2. Purchase complexity hypotheses

According to H<sub>2a</sub>, purchase complexity and brand sensitivity should exhibit a U-shaped relationship, such that brand sensitivity decreases at low to moderate levels and increases at moderate to



**Fig. 2.** Brand sensitivity as a function of purchase importance. (a) Brand sensitivity as a function of purchase importance. (b) Brand sensitivity as a function of purchase importance and brand presence. (c) Brand sensitivity as a function of purchase importance and end-customer demand.

high levels of purchase complexity. The results provide mixed evidence in support of this hypothesis. The linear ( $.04, p > .05$ ) and quadratic ( $b = .04, p > .05$ ) terms are not significant, but several of the interaction terms are significant ( $p < .05$ ), including the interaction between the quadratic purchase complexity term and product tangibility. This significant quadratic interaction, which we discuss subsequently, provides some evidence in support of the proposition that purchase complexity and brand sensitivity are related in a U-shaped fashion. We offer in Fig. 3, Panel a, a graphical depiction of the main effect relationship between purchase complexity and brand sensitivity.



**Fig. 3.** Brand sensitivity as a function of purchase complexity. (a) Brand sensitivity as a function of purchase complexity. (b) Brand sensitivity as a function of purchase complexity and firm size. (c) Brand sensitivity as a function of purchase complexity and product tangibility. (d) Brand sensitivity as a function of purchase complexity and contractual ties.

In support of our expectation of a stronger purchase complexity–brand sensitivity relationship when firms are smaller, the linear interaction term between purchase complexity and firm size is significant and negative ( $b = -.18, p < .01$ ). In Fig. 3, Panel b, we show that purchase complexity and brand sensitivity appear positively related when firms are small but unrelated when firms are large, in support of  $H_{2b}$ . Moreover, the quadratic interaction term (i.e., purchase complexity squared  $\times$  firm size) is not significant ( $p > .05$ ), which indicates that the rate of increase in the purchase complexity–brand sensitivity relationship does not change over the purchase complexity range as a function of firm size.

In  $H_{2c}$ , we proposed that the purchase complexity–brand sensitivity relationship is stronger when the product is relatively intangible (as opposed to tangible). The linear interaction term is not significant ( $p > .05$ ), but the quadratic interaction term (i.e., purchase complexity squared  $\times$  tangibility) is ( $b = -.19, p < .05$ ). The graphical evaluation of the results in Fig. 3, Panel c, suggests support for this hypothesis. Consistent with our expectations, the relationship between purchase complexity and brand sensitivity is U-shaped when the focal product is intangible-dominant. In addition, the relationship weakens when the product is tangible-dominant. The weakening of the relationship in the tangible-dominant condition results in an inverse U-shaped relationship between purchase complexity and brand sensitivity.

#### 4.2.1. Control variables

Of the seven control variables we included in the analysis, three significantly influence brand sensitivity: End customer demand increases brand sensitivity ( $b = .15, p < .05$ ), the individual buyer's risk propensity relates positively to brand sensitivity ( $b = .18, p < .05$ ), and the buyer's job level relates negatively to it ( $b = -.17, p < .05$ ), such that

brand sensitivity appears higher when the buyer holds a top management position. The buyer's level of involvement in the organization's purchasing activities is not related to brand sensitivity ( $b = .07, p > .05$ ) and neither is the presence of contractual ties ( $b = -.08, p > .05$ ). Finally, the two organizational variables, procedural control ( $b = .06, p > .05$ ) and cost orientation ( $b = .09, p > .05$ ), appear to be unrelated to brand sensitivity.

#### 4.2.2. Post hoc analyses

In addition to the proposed relationships, we consider whether two of our more interesting control variables—end customer demand and contractual ties<sup>10</sup>—moderate the study's focal relationships. In terms of the purchase importance–brand sensitivity relationship, we speculated that it should become stronger in response to high end-customer demand because buying teams should be particularly conscious about the brands that appeal to their own customers (Venkatesh & Mahajan, 1997). That is, organizational buyers' cannot easily ignore down-market brand preferences as doing so would likely be detrimental to the market performance of their own organization. Purchase importance therefore should have a stronger influence on brand sensitivity when end-customer demand is higher because end-user demand for the particular brand requires that buying center members factor brand information explicitly into their purchase decisions.

<sup>10</sup> End-customer demand refers to the direct link between the demand for an industrial product and the demand for consumer products (Hutt & Speh, 2007; Kotler & Pfoertsch, 2006). Specifically, we are referring to the idea that the demand for B2B products is “usually driven by the primary demand for consumer goods” (Rangan & Isaacson, 1991; p. 4). Further, we use the term contractual ties to refer to the presence or absence of a formal contractual agreement between a buyer and a seller.



In regards to the purchase complexity–brand sensitivity relationship, we conjectured that the presence of contractual ties would likely restrict the decision process to comparisons between the “in supplier” (i.e., supplier with contractual ties) and a set of “out suppliers” (Siddarth, Bucklin, & Morrison, 1995). This comparison would, in turn, limit the information present in the decision process and would consequently draw attention to brand information as a means of distinguishing among the few suppliers under consideration. Thus, brand sensitivity should be heightened when purchase situations are complex and contractual ties are present because such conditions accentuate the relative weighting of brand information. In contrast, a decreased emphasis on brand information is more likely when the purchase situation is simple (i.e., non-complex) and contractual ties are absent.

As is noted in Table 2 under the results column for Model C, we find a significant linear interaction between purchase importance and end-customer demand in the prediction of brand sensitivity ( $b = .15, p < .05$ ). These results suggest that brand sensitivity increases more rapidly as a function of purchase importance when end-customer demand is high. The quadratic interaction term (purchase importance squared  $\times$  end customer demand) is not significant ( $p > .05$ ) which suggests that the rate of decline of the relationship is not moderated by the extent of end customer demand in the marketplace. The relationship between purchase importance and brand sensitivity, as moderated by end-customer demand, appears graphically in Fig. 2, Panel c. The data also suggest a moderating role for contractual ties; the linear interaction term between purchase complexity and contractual ties is significant and negative ( $b = -.14, p < .05$ ). As we show in Fig. 3, Panel d, purchase complexity and brand sensitivity appear positively related when prior contractual ties are present but unrelated when no prior contractual ties exist. Once again, the quadratic interaction term (i.e., purchase complexity squared  $\times$  contractual ties) is not significant ( $p > .05$ ), thus suggesting that the rate of increase in the purchase complexity–brand sensitivity relationship does not change over the purchase complexity range as a function of the presence or absence of contractual ties. The exploratory moderation effects account for an additional 3% ( $p < .05$ ) of the variance in brand sensitivity.

#### 4.2.3. Common method variance

Following the guidelines offered by Podsakoff, MacKenzie, and Lee (2003), we evaluate the potential influence of common method variance on our results by specifying and estimating a main effects model in *Mplus 5.1* using the seven multi-item constructs we employed in the study, namely, brand sensitivity as the dependent variable and purchase importance, purchase complexity, product tangibility, risk propensity, procedural control and cost orientation as predictor variables.<sup>11</sup> The model estimation reveals that two constructs (product tangibility and risk propensity) are significant predictors of brand sensitivity while four are not. We estimated a second model that includes a methods factor that loads on all of the measurement items for the seven model constructs, but including the methods factor does not have a substantive effect on the structural parameter estimates. The same two predictors remain significant while the same four predictors remain insignificant.

We also ran a series of chi-square difference tests in which we constrained the relationship between each structural parameter of interest in the common method model to be equal with the parameter estimate generated in the main effects model. None of the chi-square difference tests is significant ( $p$  values ranged from .31 to .95), which suggests that common method variance likely had no substantive impact on our model parameter and significance estimates (Podsakoff et al., 2003). Finally, it is highly unlikely that the specific pattern of

results obtained in this study, which includes significant quadratic and interaction effects, could be caused by common method variance (for a similar argument, see Jayachandran, Sharma, Kaufman, & Raman, 2005).

## 5. Discussion

This study investigates the factors that may drive a buying center's level of sensitivity to brand information. Building on information processing theory (IPT), we propose that buying center brand sensitivity experiences a curvilinear influence from purchase importance (inverse U-shaped relationship) and purchase complexity (U-shaped relationship). In addition, we argue that these curvilinear relationships are moderated by important market, firm, and product factors.

The study's results generally confirm our IPT-based theoretical expectations and offer valuable post-hoc insights as well. First, purchase importance and brand sensitivity appear related in an inverse U-shaped fashion ( $H_{1a}$ ). That is, brand sensitivity increases as a function of purchase importance over the low to moderate purchase importance range, then decreases as purchase importance moves from moderate to high levels. This finding extends studies that suggest that brands serve as useful cues for choice simplification and risk-reduction when purchases are less important, and the usefulness of brands for this purpose increases when purchases move from low to moderate on the purchase importance range (e.g., Brown, Zablah, Bellenger, & Johnston, 2011; Kotler & Pfoertsch, 2006). In addition, the relative use of brand information for decision-making purposes declines sharply as purchases become highly important. According to IPT, this sharp decline occurs as a consequence of the intensification of the information search process, which uncovers additional informational factors that influence the choice decision. The data also reveal that the purchase importance–brand sensitivity relationship is strengthened by brand presence ( $H_{1b}$ ). When brand presence is high, brand sensitivity rises more sharply over the low to moderate purchase importance range, which makes the decline in brand sensitivity when purchase importance moves from moderate to high levels less pronounced. More generally, our findings support claims that buying team members are likely to attach different levels of importance on brand cues (Bendixen, Bukasa, & Abratt, 2004).

Second, the data generally do not support the notion that purchase complexity and brand sensitivity are related in a U-shaped fashion ( $H_{2a}$ ). Neither the linear nor the quadratic terms relating purchase complexity to brand sensitivity is significant (although, as indicated below, a U-shaped relationship between purchase complexity and brand sensitivity is evident under certain product tangibility conditions). As we show in Fig. 3, Panel a, purchase complexity and brand sensitivity remain generally unrelated over the entire purchase complexity range. However, when we consider the moderating effects of buyer firm size and product tangibility, valuable insights about the purchase complexity–brand sensitivity relationship emerge. Brand sensitivity becomes more strongly related to purchase complexity when the buying firm is small and unrelated when the buying firm is large ( $H_{2a}$ ), consistent with the notion that smaller firms have limited resources to dedicate to information processing, which prompts them to use brands as a mechanism for dealing with the information processing overload that accompanies complex purchases.

Third, product tangibility moderates the purchase complexity–brand sensitivity relationship ( $H_{2c}$ ), which also offers some evidence of the existence of a curvilinear relationship between purchase complexity and brand sensitivity. As we depict in Fig. 3, Panel c, brand sensitivity decreases as purchase complexity moves from the low to moderate range when the product is intangible-dominant. Consistent with IPT, this negative relationship results from the increase in rational decision making as a mechanism for dealing with the added complexity of the decision. Moreover, when purchase complexity

<sup>11</sup> To enable an estimation of the common method test model, we excluded all quadratic terms, interaction terms, and constructs measured using single items from the model.

rises from moderate to high levels and products are intangible-dominant, brand sensitivity increases because it provides a way to manage the informational overload that accompanies highly ambiguous choice situations. The pattern of results is completely opposite for tangible-dominant products. A moderately complex, tangible product reduces the overall uncertainty of the choice situation (compared with intangible products), leading to a reduced information search effort and greater relative influence of brand information in the low to moderate purchase complexity range. As purchase complexity rises, the overall uncertainty associated with the purchase of the tangible product rises (but is still manageable from an information processing perspective), which initiates greater information search and reduced levels of brand sensitivity. Thus, these findings add additional context to earlier B2B branding efforts that point to the difficulty in evaluating the intangible elements of B2B offerings (Mudambi et al., 1997).

Finally, we considered the moderating influence of end-customer demand and a firm's prior contractual relationships on the study's focal relationships, speculating that meaningful insights might be gained by these exploratory analyses. When end-customer demand is high, brand sensitivity modestly rises over the entire purchase importance range. This finding suggests that no matter how important the purchase is, decision makers cannot exclude brand information from the choice process when the brand commands high levels of demand in the downstream market. The success of the Intel Inside campaign provides an applicable example of this phenomenon (Moon, 2005.) In marked contrast, in low end-customer demand conditions, brand sensitivity modestly increases as purchase importance moves across the low to moderate range and then declines very sharply as purchase importance moves from moderate to high levels. Moreover, the data reveal that brand sensitivity and purchase complexity relate positively when past contractual ties are present but are unrelated when contractual ties are absent. The presence of past contractual ties appears to draw attention to brand information as a way to distinguish efficiently among the suppliers under consideration.

### 5.1. Managerial implications

To managers, the results of our study offer empirical evidence and much needed guidance regarding the likely pay-off of brand-building efforts in business markets and the relative emphasis managers should place on brand information—compared with relational and product attributes—when communicating with prospective customers. In terms of product importance, our results suggest that brand information is used most when the products being considered by the buying center are low to moderately important. B2B managers therefore should strive to build strong brands and emphasize brand values even when marketing products that tend to be perceived as less important by business customers, such as general maintenance, repair, and operation supplies. When the purchase is considered to be very important, marketers should highlight objective factors like performance and total cost of ownership factors, as well as their brands' reputations.

In terms of product complexity, our results suggest that communication efforts should emphasize brand values when the product being considered is dominated by intangibles and is highly complex or when it features more tangibles but is moderately complex. Highly complex and intangible products create uncertainty; strong brands help decision-makers deal with this uncertainty. Moreover, decision-makers appear to limit their information search process in these instances and focus on brand information when the product under consideration is tangible and moderately complex. Thus, an emphasis on brand information is beneficial in these conditions because it serves as a heuristic for product choice decisions.

These key findings therefore suggest that managers should consider those factors that shift buyers' perceptions of purchases along the purchase importance and purchase complexity continuums as they affect buyers' reliance on brand information. For example, managers of strong brands who find themselves competing in a moderately complex purchase situation might attempt to increase the level of intangibility of their offering (e.g., by bundling additional services to their core product). The result should lead to an increase in their buyers' use of brand information therefore putting them at an increased advantage over competitors.

The study's findings also suggest that brand-building efforts may have a greater impact on performance when many competing brands are available. That is, B2B managers should emphasize brand-building efforts in highly competitive environments because the presence of other branded competitors is likely to accentuate the relative use of brand information by members of the buying center. Additionally, when the product being purchased is highly complex, brand information tends to be heavily weighted by smaller firms; managers should emphasize brand information and brand values when communicating with such customers. The same is not true for larger customer firms which appear to rely on other informational factors (e.g., product attributes, relationships) when dealing with highly complex purchases. From a broader perspective, managers should recognize that the relative influence of brand information may differ across customer subgroups, and understanding which groups are likely to be more responsive to such information is critical to achieving adequate returns from brand building efforts.

Our more exploratory findings imply that brand information tends to be highly influential in the decision process when demand in the downstream market for the brand is high. Even for highly important decisions, brand sensitivity increases when end-customer demand is high. Thus, B2B communication efforts should emphasize the downstream market implications of buying center product choices. Moreover, business marketers may benefit from building strong brand equity at the end of the value chain (e.g., via cooperative or retailer promotions). This would be consistent with the strategies of manufacturers like Intel, Dupont, and BASF in that they have successfully targeted end-customers and created a level of derived demand (Aaker & Joachimsthaler, 2000). Lastly, when the product being purchased is highly complex, the presence of past contractual ties tends to augment the relative importance of brand information. Therefore, managers should strive to build strong brands to insulate their firms from competitive attacks. Because the presence of past contractual ties leads to greater brand sensitivity in complex purchase conditions, building strong brands should insulate "in suppliers" from the competitive efforts of "out suppliers." Moreover, managers can emphasize brand information in their communication efforts when dealing with past customers operating under modified rebuy conditions because such information should be relatively influential in the decision process.

### 5.2. Limitations and further research directions

As do all research efforts, our study has several limitations that point to a need for additional research. First, the effects of other variables on brand sensitivity should be studied. While relevant in organizational buying literature, two of the moderators that we tested (i.e., end-customer demand and contractual ties) are not based firmly on our underlying theoretical framework, IPT. Nevertheless, they generally behaved in the manner that we expected. Second, a single informant assessed all the constructs, which raises the possibility of common method variance. However, our analytical evaluation of this possibility suggests a low likelihood of this influence on our parameter estimates and their significance levels (Podsakoff et al., 2003). Nonetheless, additional studies should examine the role of brand phenomena in buying centers using multiple informants. This

approach would not only circumvent any common method variance concerns but also might offer important insights into the role of brands as a mechanism for dealing with divergent perspectives within the buying center, as well as into buying center conflict that might arise due to individual differences in the members' level of brand sensitivity.

Third, several of our constructs use single-item indicators. We employ these measures for several reasons, including the nature of the property being measured (e.g., firm size), survey length constraints imposed by the panel, and the unavailability of multi-item measures. However, this limitation does not invalidate the substantive results of our findings. Recent studies suggest that single-item measures can perform as well as multi-item measures (Bergkvist & Rossiter, 2007; Drolet & Morrison, 2001), and their use is not uncommon (e.g., Homburg, Droll, & Totzek, 2008). Efforts investigating brand phenomena in business markets might seek to incorporate or develop more robust, multi-item measures of several of these constructs though, including end-customer demand and contractual ties.

Fourth, we asked respondents to focus on modified rebuy situations in an attempt to balance buyer risk and buyer autonomy and thus maximize the relevance of brand information in the purchase decision. In so doing, we excluded novel purchase situations. Additional research should examine if and how brand sensitivity might influence novel buying center decisions and buying center dynamics. And future research might consider other conceptualizations of importance and complexity as they relate to the use of brand phenomena in supply management contexts. For example, the Kraljic matrix (e.g., Caniels & Gelderman, 2005, 2007) offers an array of research possibilities. Fifth and finally, we did not evaluate the effects of informational conditions (e.g., availability or quality of information) on brand sensitivity. Further studies might investigate the interplay among informational factors, brand sensitivity, and group dynamics to better understand how the information environment shapes group decision processes.

### 5.3. Concluding remarks

This study examines the conditions in which brand information is likely to influence group decision-making processes. In so doing, we also advance current understanding of how informational factors help shape buying center dynamics. At a very general level, our study confirms that group decision making is a complex process, governed by informational flows, in which objective and subjective factors exert measurable influences. However, this study represents just a first step toward improving our understanding of the role of brands in business markets; many unanswered questions remain. We hope that this study serves as a foundation for further investigations seeking to examine branding phenomena in business markets.

## Appendix

Purchase importance (semantic differential scale; Cannon & Perreault, 1999).

Compared to other purchases your firm makes, this product is:

1. Important–unimportant
2. Nonessential–essential
3. High priority–low priority
4. Insignificant–significant

Purchase complexity (semantic differential scale; Cannon & Perreault, 1999).

Compared to other purchases your firm makes, this product is:

1. Simple–complex
2. Complicated–uncomplicated
3. Technical–non-technical
4. Easy to understand–difficult to understand

Brand sensitivity (1 = strongly disagree, 7 = strongly agree; Kapferer & Laurent, 1988; Lachance, Beaudoin, & Robitaille, 2003)

1. When we made this purchase, the brand name was considered.
2. When we recommended this product, we took the brand name into account.
3. With this purchase, the brand name was important to us.

Brand Presence (binary variable, created on the basis of responses to the question; No major brands = categories 1 and 2; Many major brands = categories 3 and 4. Frequencies are reported in parenthesis for each response category. No major brands was coded as 0; many major brands was coded as 1).

Which of the following best describes the supplier environment you've been recalling?

1. Has no major brands (14.1%).
2. Has a small number of major brands (24.1%).
3. Has an even mix of major brands and less well-known brands (30.7%).
4. Has many major brands (31.1%).

Firm Size (binary variable; frequencies reported in parenthesis for each response category).

Customer firm number of employees

1. Less than 100 (46.9%; coded as 0).
2. More than 100 (53.1%; coded as 1).

Tangibility (1 = strongly disagree, 7 = strongly agree; Laroche et al., 2001)

1. We had enough product information to get a clear idea of what it would do.
2. We had a clear picture of the item.
3. The image of this item came to our mind right away.
4. This was the sort of item that was easy to picture.
5. This was an easy item to think about.

End-customer demand (1 = no consumer demand, 5 = high consumer demand).

1. To what extent do end-consumers demand the brand of the product you selected?

Contractual ties (binary variable; frequencies reported in parenthesis for each response category).

Did the supplier have a contract in place with your company?

1. Prior contract/contract extension (40.2%; coded as 0).
2. No contract (59.8%; coded as 1).

Individual risk propensity (1 = strongly disagree, 7 = strongly agree; Donthu & Garcia, 1999; Donthu & Gilliland, 1996)

1. I would rather be safe than sorry.
2. I want to be sure before I purchase anything.
3. I avoid risky things.

Purchasing involvement (1 = rarely involved, 5 = always involved)

1. To what extent are you involved in purchasing materials in your company?

Job level

1. How many levels separate you from the principal/chief executive in your firm? \_\_ levels

Procedural control (1 = strongly disagree, 7 = strongly agree; Hunter et al., 2006)

1. Our buying team had an established way of doing things for this purchase.
2. We had clear cut rules about how to make this purchase.

3. Responsibility was clearly defined for the accomplishment of each step of the purchase situation.
4. When issues came up, there were existing guidelines about how to address them.

Cost orientation (1 = strongly disagree, 7 = strongly agree)

1. I feel that my management places more emphasis on cost consciousness compared with quality consciousness.
2. My supervisors worry about cutting costs more than other factors.
3. My department places more emphasis on cost-savings compared with quality control.

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