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When Does Brand Awareness in Business Markets Really Pay Off?

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ABSTRACT

Many B2B firms focus their branding activities merely on the dissemination of the brand name and the logo, without developing a more comprehensive brand identity. At the same time, the creation of brand awareness is an important goal in many B2B branding strategies. However, it is still unclear when the high investments necessary to build high brand awareness really pay off in business markets. Therefore, drawing on information economics theory, this paper investigates under which conditions brand awareness is associated with market performance in a B2B context. Results from a cross-industry study of more than 300 B2B firms show that brand awareness significantly drives market performance. This link is moderated by market characteristics (product homogeneity and technological turbulence) and typical characteristics of organizational buyers (buying center heterogeneity and time pressure in the buying process).

CONTENTS

1 Introduction

For most companies in B2C environments, developing and maintaining strong brands is a key element of their marketing strategy (Aaker, 2002; Keller & Lehmann, 2006). In comparison, companies targeting business customers often put less strategic emphasis on branding (Bendixen, Bukasa, & Abratt, 2004). Consequently, according to the most recent brand ranking conducted by Business Week and Interbrand, only 17 B2B brands are listed among the 100 most valuable brands worldwide (Business Week, 2009). This low number is particularly surprising given the much larger economic importance of B2B relative to B2C transactions (Hutt & Speh, 2006).

Marketing managers in B2B markets therefore face an important question: Have they unjustly neglected branding as a marketing instrument? Or do B2B market characteristics prevent brands from being effective? These managers receive little guidance from marketing academia since previous research has mainly focused on B2C brands (e.g., Bendixen et al., 2004). However, considerable differences between organizational buyers and consumers prevent an easy application of findings from this research stream to a B2B context. In particular, compared to consumers, organizational buyers are characterized by being exposed to different risks comprising a personal and an organizational dimension (Mitchell, 1995), by processing information more intensively (Johnston & Lewin, 1996), and by putting greater emphasis on establishing long-term relationships with a supplier (Webster & Keller, 2004), leading to more rational buying decisions (Bunn, 1993; Wilson, 2000).

In an environment of this kind, it may well be that brands function differently compared to B2C markets. In particular, the role of brands in reducing the perceived risk of a purchase is likely to be stronger, as buyers face two types of risk: an organizational risk and a personal risk (Hawes & Barnhouse, 1987). At the same time, brands are much less likely to provide emotional benefits for the buyers (Wilson, 2000). Furthermore, a number of earlier studies have highlighted that B2B brands not only function as an entity but also as a process (Stern, 2006; Ballantyne & Aitken, 2007), making relational branding dimensions, such as customer trust and brand reputation, key determinants of brand equity (Cretu & Brodie, 2007; Glynn, Motion, & Brodie, 2007; Roberts & Merrilees, 2007).

It is likely that brand awareness also plays a special role in driving brand equity in business markets (Davis, Golicic, & Marquardt, 2008). In particular, many B2B firms focus their branding activities merely on the dissemination of the brand name and the logo, without

developing a more comprehensive brand identity (Court, Freeling, Leiter, & Parsons, 1997; Kotler & Pfoertsch, 2006). Thus, for many B2B firms, the creation of brand awareness, i.e. the ability to recognize or recall a brand, is a key element of their branding strategy (Munoz & Kumar, 2004; Celi & Eagle, 2008). For instance, the head of marketing of a large chemical firm remarked to us in a qualitative pre-study: "To us, branding is basically to put our name and logo on all products we ship to our customers. We want our customers to think of this name, whenever they consider buying products in our category."

However, little is known whether investments in brand awareness actually pay off for B2B firms. This is our point of departure. We analyze the link between brand awareness and market performance across a number of B2B industries. Based on the theory of information economics, we expect that brand awareness is related to market performance through the reduction of perceived risk and information costs for buyers (Erdem, Swait, & Valenzuela, 2006).

It is important to note that some earlier studies have already addressed the brand awareness – market performance link in single B2B industries, such as logistics (Davis et al., 2008), market research (Wuyts, Verhoef, & Prins 2009), personal computers (Hutton, 1997), or semiconductors (Yoon & Kijewski, 1995). However, as organizational buying behavior strongly depends on diverse situational characteristics (Johnston & Lewin, 1996; Lewin & Donthu, 2005), this approach neglects that the effect of brand awareness on performance could be contingent on the characteristics of the specific market. For instance, previous studies on brand awareness in business markets have largely focused on industries that are technologically turbulent. In such industries, brands are likely to play a more important role because buyer information search processes are shorter (Weiss and Heide 1993).

As a consequence, rather than asking whether brand awareness and performance are related, we ask when, i.e., under which conditions, brand awareness is associated with market performance in a B2B context. In this context, the theory of information economics points at two important types of moderators: characteristics of typical buyers and characteristics of the market (Akerlof, 1970; Stiglitz, 2000). Thus, we focus on analyzing the moderating effects of three characteristics of typical organizational buyers (buying center size, buying center heterogeneity, time pressure in the buying process) and two market characteristics (product homogeneity, technological turbulence) on the link between brand awareness and market performance.

We test these moderating effects empirically using structural equation modeling with latent interactions. For this analysis, we rely on data from a survey of marketing and sales executives, validated through objective performance information as well as publicly available brand awareness information. Our cross-firm, cross-industry sample includes more than 300 B2B firms with a broad range of products. In particular, we find strong empirical support for moderating effects of buying center heterogeneity, time pressure in the buying process, product homogeneity, and technological turbulence.

2 Conceptual Framework

2.1 Overview

The conceptual framework of our study is basically a chain of effects, leading from brand awareness via market performance to firm financial performance. In addition, we include market and buyer characteristics possibly influencing the relationship between brand awareness and market performance. The unit of analysis is a strategic business unit (SBU) within a firm (or the entire firm if no specialization into different business units exists) and its most important brand. We understand the brand as a "name, term, sign, symbol, or design, or a combination of them, [that] is intended to identify the goods and services of one seller or a group of sellers and to differentiate them from those of competitors" (Kotler, 1997, p. 443). Consequently, a supplier offers a branded product to its organizational buyers once the product is not anonymously marketed but associated with a specific identification mark. Figure 1 presents an overview of our framework and the specific constructs.

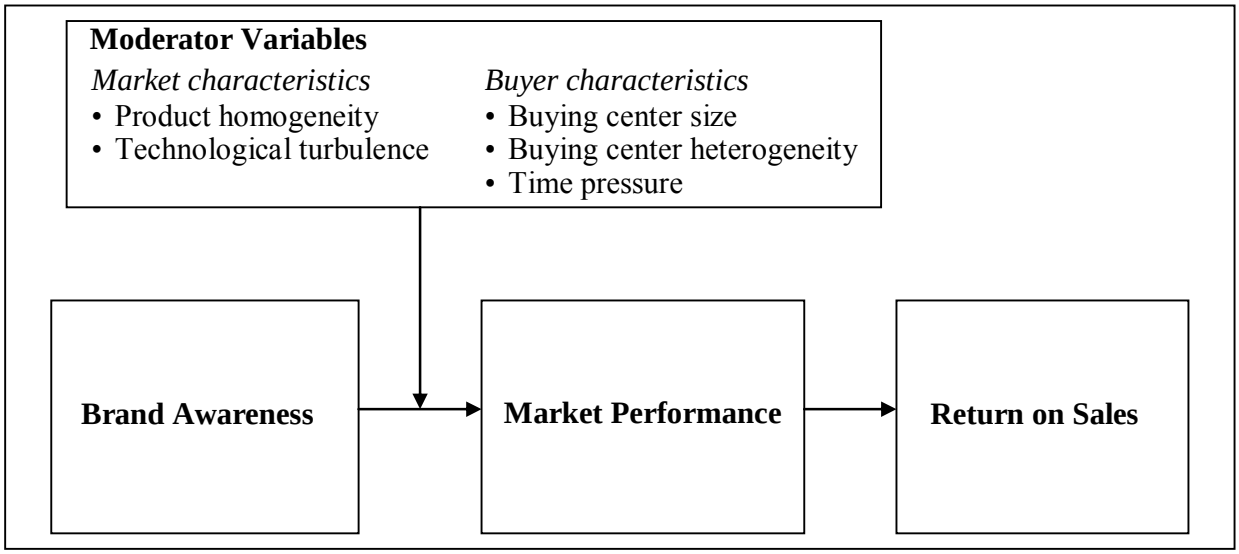


Figure 1: Framework and constructs

Brand awareness is the focal independent variable in our study. It is a key branding dimension (e.g., Aaker, 1996) and has been shown to have an impact on brand choice, even in the absence of other brand associations (e.g., Hoyer & Brown, 1990). Applying Keller's (1993) well established definition of brand awareness to a B2B context, we define *brand awareness* as the ability of the decision makers in organizational buying centers to recognize or recall a brand.

In previous research, increases in sales have been identified as a key aim of branding activities (Chaudhuri & Holbrook, 2001). Therefore, we consider market performance as a key consequence of brand awareness in our framework. We define *market performance* as firm performance regarding the development of the quantity of products or services sold, captured by customer loyalty, the acquisition of new customers, the achievement of the aspired market share, and the achievement of the aspired growth rate (Homburg & Pflesser, 2000). As recommended in a number of recent studies in the marketing literature (Lehmann, 2004; Mizik & Jacobson, 2003; Rust, Ambler, Carpenter, Kumar, & Srivastava, 2004), our framework also incorporates *financial performance*, defined as the return on sales of the SBU in the marketplace relative to competitors.

Our paper focuses on analyzing moderators of the brand awareness-performance link. We therefore do not put forward a hypothesis regarding this relationship itself. Instead, we outline the basic logic linking these constructs in the following section, before introducing possible moderators in section 2.3.

2.2 Link between brand awareness and market performance

In this section, we address the question why brand awareness may have an impact on the market performance of firms in a B2B context. We draw extensively on the theory of information economics (Spence, 1974; Erdem, Swait, & Louviere, 2002; Stump & Heide, 1996). The basic proposition of this theory is that markets are characterized by imperfect and asymmetric information. Thus, customers are uncertain about product quality and therefore perceive their decisions as risky, since the consequences of a purchase cannot be entirely anticipated. Based on this theory, it is our key rationale that brand awareness drives market performance through two mechanisms: it reduces buyer information costs and buyer perceived risk (Erdem & Swait, 1998).

The first mechanism refers to the reduction of information costs for the buying firm. In particular, to reduce resource requirements associated with collecting the information necessary for a purchase decision, buyers may resort to extrinsic cues (Richardson, Dick, & Jain, 1994; Van Osselaer & Alba, 2000). This is especially true for multi-person decision making (Hinsz, Tindale, & Vollrath, 1997), such as purchase decisions made by buying centers (Barclay & Bunn, 2006; Johnston & Lewin, 1996).

In this context, brand awareness may function as an important cue regarding a number of product and supplier characteristics. More specifically, brand awareness acts as a strong

signal for product quality and supplier commitment (Hoyer & Brown, 1990; Laroche, Kim, & Zhou, 1996; MacDonald & Sharp, 2000), because high supplier investments (e.g., in exhibitions, advertising, or packaging) are usually necessary to build high brand awareness. Thus, the supplier currently spends money expecting to recover it in the future (Kirmani & Rao, 2000), which is only likely if the products are of a certain quality. Consequently, only high-quality firms can afford high investments in brand awareness (Erdem et al., 2006; Milgrom & Roberts, 1986). Furthermore, brand awareness may signal presence and substance since high awareness implies for the buyer that the firm has been in business for a long time, that the firm is widely distributed, and that the brand is purchased by many other buyers (Aaker, 1991; Hoyer & Brown, 1990). As firms tend to "satisfice" (Simon, 1976), instead of aiming for optimal solutions, this information is likely to strongly reduce a firm's incentive to collect information on low awareness brands.

The second mechanism refers to the reduction of perceived risk. More specifically, brand awareness reduces both the personal risk of the decision makers in the buying center as well as the organizational risk for the buying firm itself (Mitchell, 1995; Hawes & Barnhouse, 1987). The personal risk may relate to job security, career advancement, as well as status and appreciation within the company (Anderson & Chambers, 1985; McQuiston & Dickson, 1991). The role of brand awareness in reducing the personal risk for members of a buying center is well described in the popular saying that "nobody ever got fired for buying IBM." It is likely that decision makers prefer to buy a brand with high awareness, because it reduces the risk of being blamed if the decision turns out a mistake. Additionally, high brand awareness may also reduce perceived organizational risk (Dawar & Parker, 1994; Mitchell, 1995). In particular, organizations may well assume that brands they know well are likely to be purchased by many other firms (Aaker, 1991). Therefore, they have reason to expect that the purchase of a well-known brand will not result in any competitive disadvantage. At the same time, as described above, brand awareness signals high product quality (Dawar & Parker, 1994; Rao & Monroe, 1989). Thus, purchasing high awareness brands is also associated with a reduced functional risk for the organization, which further influences brand choice.

2.3 Moderators of the link between brand awareness and market performance

In the last section, we have described the general logic linking brand awareness to the performance of a brand in the market. However, given the diversity of different B2B markets, it is the key goal of our study to analyze the conditions, under which this link is particularly pronounced. We therefore include a number of moderating variables in our framework.

Our choice of moderators is again guided by information economics. It points at two factors influencing a buyer's need to reduce information costs and perceived risk: the market and the organizational buyer (Akerlof, 1970; Stiglitz, 2000). Depending on the characteristics of a market, buyers may have different uncertainty levels, information requirements, and information acquisition costs (Nelson, 1970). Two key characteristics determining these uncertainty and information aspects in a market are product homogeneity and technological turbulence (Achrol & Stern, 1988). In organizational buying literature, these two characteristics have been shown to influence information and risk behavior of organizational buyers (Spekman & Stern, 1979; Tushman & Nelson, 1990; Weiss & Heide, 1993). For instance, the duration of the overall information search process is shorter in turbulent than in stable markets (Weiss & Heide, 1993).

Characteristics of an organizational buyer may also be related to information requirements and information costs. These are mainly determined by the available sources of information, the buyer's capacity, and the time frame in which information search has to take place (Bunn, Butaney, & Hoffman 2001). As a consequence, buying center size, buying center heterogeneity, and time pressure can be identified as important buyer characteristics for our study. They have also been shown to influence information and risk behavior of organizational buyers (Dawes & Lee, 1996; Johnston & Lewin, 1996; Kohli 1989).

Therefore, we address two sets of moderator variables which we expect to impact the awareness – performance link: characteristics of the market (product homogeneity, technological turbulence) and characteristics of typical organizational buyers (buying center size, buying center heterogeneity, time pressure in the buying process). In the following, we define each of those characteristics.

Regarding *market characteristics,* we include *product homogeneity*, defined as the degree of technological or benefit-related similarity between the products in a particular market (Weiss & Heide, 1993), and *technological turbulence*, defined as the rate of technological change in

an industry (Jaworski & Kohli, 1993). With respect to *characteristics of typical buyers*, we study possible moderating effects of buying center size, buying center heterogeneity, and time pressure. *Buying center size* refers to the number of individuals involved in a typical customer's buying decision (Kohli, 1989). *Buying center heterogeneity* relates to the variety of individuals in the buying center with respect to prior knowledge, functional background, and objectives. Finally, *time pressure* refers to the extent to which buying center members feel pressured to make a decision quickly (Kohli, 1989).

3 Hypotheses development

3.1 Moderating effects of market characteristics

In the following, we develop hypotheses regarding the effect of possible moderators on the link between brand awareness and market performance. In this section, we focus on the moderating effects of market characteristics: product homogeneity and technological turbulence.

3.1.1 Product homogenity

In markets with high product homogeneity, the buying organization has great difficulty in distinguishing the different product offerings and their quality. Thus, information costs may be high because an extensive information search and a deep analysis are necessary in order to detect some of the possible quality differences among products. However, it may not be worth for the buyer to bear such high information costs since possible differences may probably not be significant. In such a situation where economic or objective decision criteria are problematic to apply, buyers may resort to extrinsic cues, and brand awareness is more likely to be the decisive factor for the purchase decision (Warlop, Ratneshwar, & Van Osselaer, 2005).

This reasoning finds support in the consumer behavior context, where for simple choice tasks consumers have been shown to use simple heuristics based on awareness, such as "buy the best known brand" (Hoyer & Brown, 1990). Findings from research in organizational buying behavior also support the expectation of a positive moderating effect of product homogeneity. Weiss and Heide (1993) show that the overall duration of the search process is longer when the homogeneity of the products in a market is low. In this case, buyers rely more heavily on the large amount of diverse and possibly more objective information gathered in extensive information search. Thus, in the case of low product homogeneity, the impact of brand awareness on buying decisions is most likely smaller. Therefore, we hypothesize:

H_1: In the case of high as opposed to low product homogeneity, brand awareness affects market performance more positively.

3.1.2 Technological turbulence

In the case of high technological turbulence, uncertainty about technological innovation and hence also the perceived risk for organizational buyers are high (Aldrich, 1979). Buyers may perceive a higher risk to miss out on an innovation or to focus on the wrong innovation or product. At the same time, it might be more difficult to be up-to-date and to have a deeper knowledge about all relevant innovations and products since high and rapid technological changes can be "competence destroying" for a buyer (Tushman & Nelson, 1990, p. 4). As a consequence, decision makers may put more emphasis on reducing the risk associated with a buying decision. In such an environment, brand awareness is likely to be more important as a signal of quality, substance, and commitment than in case of low turbulence and thus may more strongly reduce the perceived risk of organizational buyers.

Additionally, in the case of higher technological turbulence, the duration of the overall information search process is shorter (Weiss & Heide, 1993). As acquired information in technologically turbulent markets is time-sensitive and has a short "shelf life," buyers have an incentive to act on it more quickly and curtail the search processes (Eisenhardt, 1989; Weiss & Heide, 1993). Consequently, buyers may not have the time to gather information about all existing product alternatives, making brand awareness a more critical factor for a product to be purchased. As a result, we expect that in the case of high technological turbulence (where the buyer's uncertainty and risk are high), the overall effect of brand awareness on market performance is stronger. Therefore, we hypothesize:

H_2: In the case of high as opposed to low technological turbulence, brand awareness affects market performance more positively.

3.2 Moderating effects of characteristics of typical buyers

In this section, we continue to develop hypotheses regarding the effect of possible moderators on the link between brand awareness and market performance. In particular, we now focus on developing hypotheses regarding the moderating effects of characteristics of typical buyers: buying center size, buying center heterogeneity, and time pressure.

3.2.1 Buying Center Size

When buying center size is high, then more resources are available for the decision making process than in the case of low buying center size. More individuals are engaged in information search and analysis. This may result in a more extensive scanning and deeper analyses of relevant information on different products (Hill, 1982). Furthermore, the influence of experts on the buying decision has been shown to be higher in large buying centers (Kohli, 1989). In such a situation, buyers may rely more heavily on the large amount of possibly more objective information gathered in extensive information search as well as on expert opinions. Consequently, the importance of brand awareness for the purchase decision may be reduced.

Furthermore, the risk perceived by the members of the buying center is lower when more people are involved in the purchase decision. When lots of information is collected, analyzed and evaluated by the buying center, the uncertainty and thus the perceived risk of the buyers is reduced. In addition, studies from social psychology have shown that the risk perceived by an individual is lower when decisions are made in large groups (e.g., Myers & Lamm, 1976). As a consequence, the role of brand awareness as a quality signal may be less important, and the influence of brand awareness on the purchase decision may be reduced. Thus, we hypothesize:

H_3: In the case of high as opposed to low buying center size, brand awareness affects market performance less positively.

3.2.2 Buying center heterogeneity

In the case of high buying center heterogeneity, individuals in the buying center have diverse functional backgrounds, work in different departments and on different hierarchical levels, and may have different roles within the purchasing process. Thus, the variety of skills and knowledge within the buying center may be high. Furthermore, including many different individuals, the buying center may have a higher level of diverse information on the products in the market (Shaw, 1976). As a consequence, the purchase decision can be based on the

available information allowing a more objective evaluation. In contrast, the importance of brand awareness saving information costs may be reduced.

Furthermore, different kinds of knowledge among the buying center members increase the probability that a brand with low awareness is recalled by the buying center because it is more likely that at least one of the members knows this brand. This may reduce the impact of brand awareness on brand choice. Finally, high buying center heterogeneity is associated with higher degrees of formalization, i.e. buying activities are formally prescribed by rules, policies, and procedures (Johnston & Bonoma, 1981). This further decreases the importance of signals and extrinsic cues like brand awareness for the purchase decision.

Thus, we hypothesize:

H_4: In the case of high as opposed to low buying center heterogeneity, brand awareness affects market performance less positively.

3.2.3 Time pressure

When the purchasing organization needs to reach a buying decision quickly, both uncertainty and the perceived risk for the organization are high (Johnston & Lewin, 1996). Time may be too short to search for sufficient information about the products. In such an environment, brands can increasingly function as a signal for product quality and reduce uncertainty.

However, under low time pressure, buyers more extensively search for information and use quantitative and structured techniques for analyzing the purchase (Bunn, 1994; Gronhaug, 1975). Findings from social psychology also show that groups more carefully attend to the available information when time pressure is low (Karau & Kelly, 1992). Furthermore, under low time pressure, buying center members are likely to have more active interpersonal communication with each other, thus exchanging more information relevant for the purchase decision (Dawes & Lee, 1996; Kohli, 1989). As a consequence, buyers will base their decision more strongly on the information gathered and on their purchase analyses rather than on extrinsic cues such as brand awareness.

Finally, another finding from social psychology shows that during group discussions unshared information is mentioned relatively late, thus increasing the bias toward shared information when time pressure is high (Larson, Foster-Fishman, & Keys, 1994). Consequently, when buyers need to reach a decision quickly, the well-known brand as shared information is more

likely to be in the center of the group discussion, which increases the likelihood of the brand entering the consideration set. Therefore, we hypothesize:

H_5: In the case of high as opposed to low time pressure, brand awareness affects market performance more positively.

4 Methodology

4.1 Data collection and sample

In our study, the unit of analysis is a strategic business unit (SBU) within a firm (or, if no specialization into different business units exists, the entire firm) and its most important brand. To obtain the necessary data for testing our framework, we relied on a large-scale survey of companies in B2B environments using key informants. Our initial sample consisted of 1,850 firms (or business units when applicable) from a broad range of industries (machine building, electronics, chemicals, automotive supply, and others). These firms were contacted by telephone to identify the head of marketing, and a questionnaire was subsequently sent to these managers.

To ensure the reliability of our key informants, we included one item at the end of the questionnaire asking for the degree of involvement of the respondents with branding decisions in their firm. Returned questionnaires were discarded if this item was rated lower than five on a seven-point scale, with seven indicating high involvement. As a result, we had 310 useable questionnaires, corresponding to a response rate of 16.8%. To our knowledge, this is the first cross-industry sample analyzing branding effectiveness in B2B environments. Table 1 shows the composition of our sample.

Industries	%
Machine building	35
Electronics	16
Chemicals	20
Automotive	12
Other	17
Position of respondents	
Head of marketing	43
Head of sales	13
General management responsibility (head of strategic business unit, managing director, chief executive officer)	24
Other	20
Annual revenues of the firm	
<$25 million	15
$25 million–$49 million	17
$50 million–$124 million	23
$125 million–$249 million	9
$250 million–$499 million	8
$500 million–$1,250 million	6
>$2,000 million	22
Number of employees of the firm	
<200	16
200-499	29
500-999	18
1,000-4,999	13
5,000-10,000	5
>10,000	19

Table 1: Sample composition

We tested for nonresponse bias in our data by comparing construct means for early and late respondents (Armstrong & Overton, 1977). No significant differences were found, indicating that nonresponse bias is not a problem. Additionally, to assess a possible nonresponse bias, we included response time as a control variable in our structural model. This did not alter our substantive findings in any way, which also indicates the absence of nonresponse bias.

4.2 Measures

We followed standard psychometric scale development procedures. Multi-item scales and single indicators were developed on the basis of a review of the extant literature and interviews with practitioners. We then pretested the questionnaire and further refined it on the basis of the comments from marketing managers and scholars during the pretest. A complete list of items appears in Appendix 1.

We measured *brand awareness* by asking managers to assess the average brand awareness in their marketplace with four items covering recognition, recall, top-of-mind, and brand knowledge (Aaker, 1996). These items closely match key metrics in brand tracking studies, which are regularly carried out in a large number of firms (Keller, 2007). We therefore expect that our key informants can provide valid answers with regard to our brand awareness measures. This expectation is also rooted in a comparison of the managerial assessments of brand awareness with publicly available brand awareness information, as described in the next section on measure validation using additional data.

We measured *market performance* with four items asking for the managerial assessment of the SBU's average volume-related performance over the last three years in terms of customer loyalty, the acquisition of new customers, the achievement of the desired market share, and the achievement of the desired growth (Homburg & Pflesser, 2000; Reinartz, Krafft, & Hoyer, 2004; Workman, Homburg, & Jensen, 2003). Matching our definition, we measured *financial performance* with one item asking for the managerial assessment of the SBU's return on sales relative to competitors over the last three years. For both of these constructs, we describe validations using publicly available performance data in the next section.

With regard to the moderator variables, we measured *product homogeneity* with three newly-developed items asking for the similarity of product characteristics in the market. *Technological turbulence* was measured with three items adapted from the work of Jaworski and Kohli (1993). To measure *buying center size,* we used a single item, asking respondents how may people were involved in the buying decision in typical customer firms. *Buying center heterogeneity* was measured with three items asking how members of typical customer buying centers differ (Stoddard & Fern, 2002). Finally, to measure *time pressure* we used three items adapted from the work of Kohli (1989), asking respondents to assess whether decision makers in typical customer firms need to make their purchase decisions quickly.

We included eight control variables in our model. *SBU size* was measured by the number of employees that work in the SBU. *Brand coverage* relates to the type of brand (company, family, or product brand). *Brand share of revenues* was measured with one item asking for the brand share of SBU revenues in the previous year. *Low price strategy* was measured through one item, asking how strongly the brand stands out from the competition by its focus on low prices. *Advertising expenses* was also measured through a single item, measuring the share of revenues spent on advertising. For *technical product quality*, we used a single-item measure that asked respondents for their rating of their SBU's technical product quality relative to competitors. We measured *service quality* through three items asking for the quality of the SBU's services, its distribution network, and its logistic processes relative to competitors. Lastly, as described in the previous section, we included response time as control variable in our model to control for possible differences between early and late respondents. Response time was measured as the number of days between the day we sent out the questionnaire and the day, we received it again.

Using confirmatory factor analysis, we assessed measure reliability and validity for each construct. Overall, our measures exhibit good psychometric properties. A comparison of squared correlations between constructs and their average variances extracted further indicates no problems with regard to discriminant validity (Fornell & Larcker, 1981).

4.3 Further measure validation using additional data

To validate the key informant response regarding the three key variables in our framework – brand awareness, market performance, and financial performance – we collected additional data. In particular, regarding brand awareness we scanned relevant trade journals, business magazines, and publicly available brand rankings (from market research companies, trade journals, etc.) from the industries included in our study in order to identify brand awareness data of the brands included in our sample. We were successful in doing so for 53 of the brands included in our sample. For these brands, we were able to identify either percentage information (with regard to recognition) or relative information on the brand's position in a brand awareness ranking. We coded this information into one seven-point scale (with anchors "recognition > 86%" to "recognition < 14%" and "position among the first 14% in a ranking" to "position among the last 14% in the ranking"). We then calculated the correlation between the newly gathered information on recognition and the managerial assessments of brand

awareness. The corresponding correlation coefficient was positive – as expected – and highly significant ($r = .56$), thus providing further support for the validity of the key informant assessments.

To validate the key informant responses regarding market performance and financial performance, we collected performance data from independent sources. More specifically, we sought firms for which objective performance information is publicly available, and identified 66 such firms in our sample (21 %). Using financial databases and annual reports from the firms' websites, we obtained revenue and return on sales information for three consecutive years for the SBUs that participated in our study. We then calculated the average sales growth over the last three years, matching the time horizon of our market performance measure. This measure of sales growth is highly correlated with respondent assessments of market performance ($r = .47$, $p < .01$). In this context, we believe this correlation to be sufficiently high for two reasons. First, sales growth is only one indicator of the market performance construct. Second, we asked managers to assess market performance relative to their competitors, while objective performance information is non-comparative. We also ran a simple OLS regression to check, whether results using objective sales growth data differ from our findings using the survey data. Results from this analysis are consistent with our main findings. In particular, the pattern of coefficients linking the interaction terms to the dependent variable is similar in both models.

Based on the objective performance information available, we also calculated the average return on sales over the last three years and compared it with the financial performance construct in our framework. Again, it must be noted that objective performance information is non-comparative, while the managerial performance measure is relative to competitors. Nevertheless, the correlation between objective and subjective performance assessments is highly significant ($r = .71$, $p < .01$). In sum, these results support the notion that our respondents are reliable key informants for the topic studied.

4.4 Tests for common method bias

As we rely on key informants for the assessment of all constructs in our framework, common method bias may be a threat to the validity of our findings (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). In line with other recent studies in the marketing literature (Jayachandran, Sharma, Kaufman, & Raman, 2005; Ramani & Kumar, 2008), we therefore assessed the magnitude of this threat using multiple methods.

In this context, it is important to note that our study focuses on identifying moderating effects. Thus, our hypotheses imply that the strength of the link between brand awareness and market performance differs for different subgroups in our sample. At the same time, common method bias has been shown not to create artificial moderating effects (Evans, 1985). Consequently, in the following, we are mainly interested in finding out, whether the links in our basic framework comprising the links from brand awareness to market performance and financial performance are biased through common method bias. Additionally, support for our hypotheses also indicates absence of common method bias between brand awareness and market performance.

To test for common method bias, we first applied the Harman single-factor test. In this test, a single-factor model where all manifest variables are explained through one common method factor is compared via a chi-square difference test to the multi-factor measurement model actually used in the study. In our study, the single-factor model yielded a chi-square of 1897.7 (464 df). The fit of this model is significantly worse than the fit of the measurement model with all constructs in our framework ($\Delta\chi^2$(111 df)=1454.3, $p \leq .01$), indicating that the correlations between observed variables cannot be adequately explained through one common method factor.

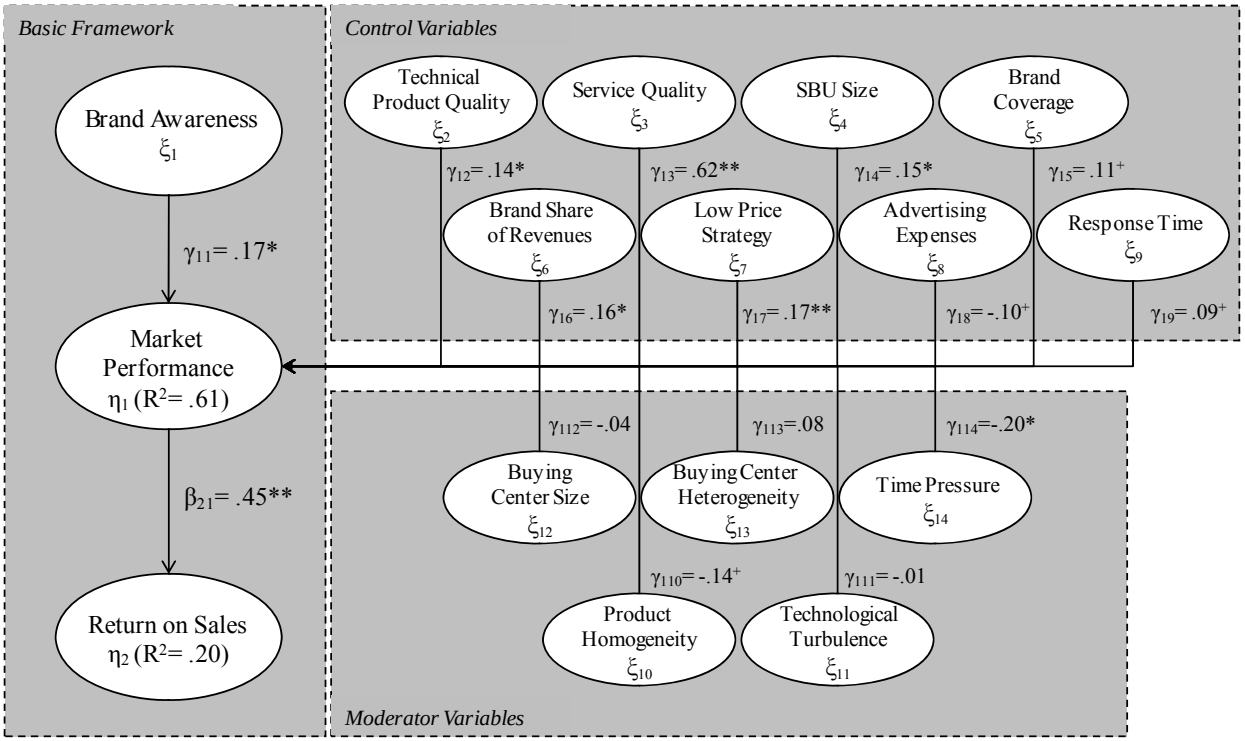
Second, we used the Lindell and Whitney (2001) procedure, which is based on the idea that the degree of common method bias present in a set of data can be assessed by determining the correlation between a key dependent variable in the framework and a variable that theoretically should be uncorrelated with it (the marker variable). This correlation can then be used to correct the correlation matrix for common method bias. In the context of our study, we chose the correlation between technological turbulence and return on sales (r=.01) to correct the correlation matrix for common method bias. The significance of the correlations does not change, which indicates the absence of common method bias (Van Doorn & Verhoef, 2008).

Lastly, we included a general common method factor in the structural model described in the next section. Similar to Parker (1999), we specified a general method factor. Every item from the constructs in our basic structural framework was allowed to load on this factor, except for response time and brand coverage where common method effects seem very unlikely. Thus, the common method factor reflects the variance common to all these indicators. To ensure model identification, we specified this general method factor to be uncorrelated with the other constructs in the framework. This corresponds to the assumption that the degree of common method bias is not associated with the magnitude of the constructs themselves. This assumption is typical for a large number of common method variance models (Podsakoff et al., 2003). We believe that it is quite realistic in the case of our research, as it is unlikely that the managers in firms with high awareness brands are more (or less) prone to common method biases. Inspection of the path coefficients in the resulting model revealed that the effects in this framework hold, even if such a common method factor is included. This is a strong indication that our findings are not mere artifacts due to the use of the same data source for all constructs.

5 Results

5.1 Basic framework

We used Mplus 4.2 to model the structural relationships put forward in our hypotheses. We first estimated a model with all variables from our framework and all control variables, but without including any interaction term. Global fit measures of this model indicate very good model fit (χ^2/df=1.21; RMSEA=.033; NNFI=.95; CFI=.96; SRMR=.048). Figure 2 shows the results regarding the standardized path coefficients in this model.



* : p < .05; ** : p < .01; Note: Completely standardized coefficients are shown.

Figure 2: Results regarding main effects

Results show strong links regarding the main effects in our framework. More specifically, brand awareness is positively associated with market performance (γ_{11} = .17; p < .05). In turn, market performance is positively related to return on sales (β_{31} = .45; p < .01).

5.2 Moderated effects

To test our moderating hypotheses, we included latent interactions between the moderator and the respective independent variables in our model. We relied on the unconstrained model specification to specify the latent interaction while using matched pairs to form the product indicators for the interaction terms (Marsh, Wen, & Hau, 2006). This approach has been shown to produce reliable results under a wide variety of conditions (Marsh, Wen, & Hau, 2004). As it is relatively new to the marketing literature, we will describe it in more detail with regard to H_1.

H_1 predicts that in the case of high as opposed to low *product homogeneity*, the effect of brand awareness on market performance is stronger. Thus, H_1 implies an interaction effect of the latent variable brand awareness (ξ_1) and product importance (ξ_{10}) on market performance. Analogous to regression approaches to testing interaction effects (e.g., Cohen, Cohen, West, & Aiken, 2003), H_1 is considered to be supported if the path coefficient $\beta_{1(1\times10)}$ linking a latent interaction term $\xi_1\times\xi_{10}$ to market performance (η_1) is statistically significant.

To measure $\xi_1\times\xi_{10}$, we rely on indicators that are products of the indicators of the latent variables involved in the interaction. Drawing on a large simulation study, Marsh et al. (2004, p. 296) posit two guidelines when forming these product indicators: (1) use all of the information and (2) do not reuse any of the information. They recommend forming product indicators by using every indicator of ξ_1 and every indicator of ξ_{10} just once, which leads to "matched pairs" (Marsh et al., 2004, p. 279).

However, as product homogeneity (like most other moderators in our framework) is measured through only three indicators (x_{15}, x_{16}, x_{17}), whereas brand awareness is measured through four indicators (x_1, x_2, x_3, x_4), in our case no natural number of indicator pairs results. Thus, we cannot strictly follow both guidelines referred to above. As all four indicators of brand awareness reflect important facets of the construct (Aaker, 1996), we decided to put more emphasis on the advice to use all of the information. We therefore always used all indicators of brand awareness when forming the product indicators. More specifically, to measure $\xi_1\times\xi_{10}$ we formed four product indicators, namely $x_1\times x_{15}$, $x_2\times x_{16}$, $x_3\times x_{17}$, and $x_4\times x_{15}$. Following Algina and Moulder (2001) and in accordance with traditional regression approaches to analyzing interactions, we mean-centered all indicators before creating the product indicators to facilitate interpretation of the results.

In the next step, we included $\xi_1 \times \xi_{10}$ as antecedent to market performance (η_1) in the structural equation model described in the previous section (i.e., including all moderator variables and all control variables). Formally, the introduction of a latent interaction in a structural equation model implies a number of additional constraints regarding the parameter estimates. However, an extensive simulation study by Marsh et al. (2004) shows that under a wide variety of conditions not specifying these constraints will improve results from model estimation. Therefore, we applied the unconstrained estimation strategy advocated by Marsh et al. (2004) and estimated the resulting structural equation model using Mplus 4.2 without specifying parameter constraints.

With regard to the link between the interaction term and market performance, we find a significant effect ($\beta_{1(1\times10)} = .14$, $p < .05$). Thus, as predicted by H_1, in markets characterized by high product homogeneity, brand awareness and market performance are more strongly related.

We proceeded in a similar way to test the remaining moderated effects put forward by our hypotheses. Table 2 summarizes the results regarding the moderating effects.

Moderator	Hypothesis	Effects on market performance BA[1)]	MOD[2)]	IAT[3)]	Support
Product Homo-geneity	***H1**: In the case of high as opposed to low product homogeneity, brand awareness affects market performance more positively.*	.17*	-.14^{+}	.14*	✓
Techno-logical Turbulence	***H2**: In the case of high as opposed to low technological turbulence, brand awareness affects market performance more positively.*	.18**	-.03	.18*	✓
Buyer Center Size	***H3**: In the case of high as opposed to low buying center size, brand awareness affects market performance less positively.*	.17*	-.02	-.07	--
Buying Center Hetero-geneity	***H4**: In the case of high as opposed to low buying center heterogeneity, brand awareness affects market performance less positively.*	.13^{+}	.00	-.13*	✓
Time Pressure	***H5**: In the case of high as opposed to low time pressure, brand awareness affects market performance more positively.*	.17*	-.21**	.12*	✓

[1)] BA=Brand Awareness [2)] MOD=Moderator [3)] IAT=Interaction Term
$^{+}$: $p < .1$; *: $p < .05$; **: $p < .01$
Completely standardized coefficients are shown.

Table 2: Results regarding moderated effects

In particular, H_2 is also supported by our data ($\beta_{1(1\times11)} = .18$, $p < .05$). Thus, we find that a firm's market performance is more strongly associated with brand awareness if technological turbulence in the industry is high.

With regard to characteristics of the firm's typical buyers, we do not find a moderating effect of buying center size on the link between brand awareness and market performance ($\beta_{1(1\times12)} = -.07$, $p > .10$). Thus, H_3 is not supported by our data. At the same time, *buying center heterogeneity* moderates the relationship between brand awareness and market performance

($\beta_{1(1\times13)} = -.13$, $p < .05$). Brand awareness is less strongly associated with market performance

if typical customers have heterogeneous buying centers. As a result, our data support H_4. Lastly, we also find a moderating effect of the *time pressure* that the firm's typical customers face. More specifically, H_5, predicting a stronger association between brand awareness and market performance when time pressure is high, is supported by our data ($\beta_{1(1\times14)} = .12$, $p < .05$).

It is worth noting that in these models, the latent interaction terms were entered one at a time. Additionally, we tested the stability of our results in two ways. First, we estimated a structural equation model where all interaction terms where entered simultaneously. Results are similar to the results reported here. Second, we estimated an OLS regression model where all moderators and corresponding interaction terms were also entered simultaneously. The results from this additional analysis are highly consistent with the analyses reported here.

6 Discussion

6.1 Research issues

As noted, B2B marketing managers receive little guidance from marketing academia on the question whether investments in the creation of brand awareness pay off in business markets. First, findings on the effects of brand awareness in B2C markets cannot be easily applied to a B2B context due to the distinct risk and information behavior of organizational buyers (Johnston & Lewin, 1996; Mitchell, 1995). Second, previous empirical B2B branding studies have focused on single industries (Yoon & Kijewski, 1995; Wuyts et al., 2009), but organizational buying behavior strongly depends on diverse situational characteristics (Lewin & Donthu, 2005). Against this background, it is important to investigate *under which conditions* brand awareness is associated with firm performance in business markets.

Our study addresses this question by developing and empirically testing a contingency framework linking brand awareness to market performance. In particular, we analyze how market characteristics (product homogeneity, technological turbulence) and characteristics of a firm's typical organizational buyers (buying center size, buying center heterogeneity, time pressure in the buying process) moderate the relationship between brand awareness and market performance. We believe the design of our study and the findings from the empirical analysis advance academic knowledge in several ways.

First, our study shows that under specific conditions, brand awareness is strongly related to performance in business markets. We find this effect while controlling for technical product quality, service quality, and several other constructs. Consequently, our study contributes to the growing body of literature on B2B branding by showing that the creation of brand awareness is indeed associated with performance in B2B environments. Importantly, in contrast to a number of earlier studies on the subject, our findings are based on a sample that is not restricted to a single industry. Therefore, we believe that our study is among the first to allow generalizable statements about B2B branding.

Second, we study the effect of situational characteristics on the link between brand awareness and market performance. In doing so, we follow calls from previous research to study moderators of the branding–performance link, particularly with regard to market characteristics (Cretu & Brodie, 2007; Hutton, 1997; Van Riel, de Mortanges, & Streukens, 2005) and characteristics of the buying situation (Davis et al., 2008). We find that product homogeneity,

technological turbulence, buying center heterogeneity, and time pressure in the buying process all significantly moderate the association between brand awareness and market performance. Thus, we contribute to marketing research by identifying situations in which B2B brand awareness is related to performance.

It needs to be emphasized that our study takes a supplier perspective on measuring buyer characteristics. We asked our respondents to provide assessments of the buying center and buying situation for *typical* customers. This approach ignores that every B2B firm will face some heterogeneity regarding the buying processes within its customer base. However, as market factors and environmental factors have an important influence on organizational buying processes (Dwyer & Tanner, 2006; Johnston & Lewin, 1996), customers in specific markets will likely share specific traits. Thus, to some extent B2B firms can be expected to have "typical" customers. Additionally, as branding decisions affect the entire customer base simultaneously, marketing managers in B2B firms will likely base their branding decisions on perceptions of typical customers. Against this background, we believe that our approach to measure characteristics of typical customers is appropriate.

Third, previous empirical research on the effects of B2B branding in general has produced mixed results. However, it has typically focused on only one industry. For that reason, the differing results may well stem from situational characteristics in the industries considered in these studies. The results from our moderator analysis may also be used to integrate these previous findings in the B2B branding literature. For example, our results indicate that brand awareness is more strongly associated with performance in markets with high technological turbulence. This finding is consistent with earlier studies showing a positive effect of branding in markets that can be considered relatively turbulent, such as semiconductors (Yoon & Kijewski, 1995), personal computers (Hutton, 1997), precision bearings (Mudambi, 2002), or logistics services (Davis et al., 2008), and other studies finding no effect in markets that can be considered as more stable, such as wood (Sinclair & Seward, 1988), fibers (Saunders & Watt, 1979), and shampoo markets (Cretu & Brodie, 2007).

While we investigated several moderators of the basic link that are important from an information economics perspective and that have been identified as key factors influencing organizational buying behavior, it may be an interesting avenue for future research to analyze further characteristics possibly influencing the awareness–performance link. For instance, it may be interesting to investigate the role of the delivery process or buyer-seller relationships

which often play an important role in business markets.

At least two limitations of our study need to be mentioned. They also provide avenues for further research. First, it has to be noted that our study focuses on only one key branding dimension, namely brand awareness. We focused on this dimension since we believe that brand awareness plays a special role in driving brand equity in business markets where many firms limit their branding activities merely on the dissemination of the brand name and the logo. It may be an interesting avenue for further research to investigate the effects of other branding dimensions. For instance, given the importance of long-term business relationships, relational constructs such as customer trust or company reputation may also play a major role in business markets (Blombäck & Axelsson, 2007; Cretu & Brodie, 2007; Firth, 1993; Glynn et al., 2007; Lehmann & O'Shaughnessy, 1974).

Second, we rely on a cross-sectional survey design to collect data to test our hypotheses. This limits our ability to make strong causal claims based on our results. In particular, as our data analysis is basically correlational, we cannot eliminate the possibility that the association between brand awareness and performance is at least partially due to a causal effect from market performance on brand awareness. For instance, it appears possible that success in a marketplace leads to customer attention and thus also creates brand awareness. Consequently, based on our results it cannot be claimed with certainty that brand awareness causally affects a firm's market performance. However, it is worth noting that it is far more difficult to apply this logic of reverse causality to most of our moderator hypotheses. For instance, there seems to be no intuitive explanation, why a possible effect from market performance on brand awareness should be more strongly pronounced in markets where buying centers are heterogeneous or where buyers face high time pressure. Thus, our findings in this regard taken together with the strong theoretical rationale behind a causal effect from brand awareness on market performance raise our confidence that this link actually exists. Nevertheless should future research directly address these causality issues by studying the link between brand awareness and market performance in B2B markets using longitudinal data.

6.2 Managerial implications

Many practitioners in B2B markets are still skeptical as to whether the high investments usually associated with building and establishing high brand awareness really pay off. Our study addresses this issue. It shows that even in B2B markets, brand awareness may provide

an opportunity to differentiate products or services and gain an advantage over competitors.

To achieve high brand awareness, B2B companies have to increase the familiarity of the brand. In B2C markets, repeated advertising (Miller & Berry, 1998), sponsoring (Cornwell, Roy, & Steinard, 2001), brand alliances (Simonin & Ruth, 1998), and public relations (Keller, 2007) have been identified as successful means for increasing brand awareness. In a study focusing on B2B markets, Bendixen et al. (2004) found that brand awareness is created through technical consultants and sales representatives, professional and technical conferences, and exhibitions as well as through journals or professional magazines.

However, our study also shows that brand awareness is more strongly associated with market performance under some conditions than under others. Therefore, marketing managers must analyze and fully understand the whole buying center of their typical customers and their purchase background. These analyses are important, as the association between brand awareness and firm performance is strongly reduced in markets with heterogeneous buying centers, as well as in markets where customers do not face time pressure for the purchase. Furthermore, managers should have a clear understanding of the technological turbulence in their market as well as of their company's position with regard to the differentiation versus commoditization of its offerings. The effectiveness of brand awareness has been shown to be strongly reduced in markets that are technologically stable and characterized by heterogeneous products.

7 Conclusion

The importance of branding for increasing firm performance is firmly established for B2C firms. However, the differences between consumer decision making and organizational buying prevent an application of findings on B2C branding to B2B contexts. Therefore, this paper was interested in the association between B2B branding and performance.

We focused on brand awareness because increasing brand awareness is a key element of many B2B branding strategies. In particular, it was the main objective of this paper to understand when, i.e., under which conditions, brand awareness is associated with market performance. Based on a cross-firm, cross-industry survey sample with more than 300 B2B firms, we find that the association between brand awareness and market performance is stronger in markets with homogenous buying centers, high buyer time pressure, homogenous products, and a high degree of technological turbulence.

APPENDIX 1: MEASURES AND ITEMS

Measures	**Item Rel.**
Brand Awareness; newly developed, based on Aaker (1996), seven-point scale: "strongly disagree" to "strongly agree"	
The decision makers of our potential customers have heard of our brand.	.60
Our brand is immediately recalled by the decision makers of our potential customers when they think of our product category.	.82
Our brand is often at the top of mind of the decision makers of our potential customers when they think of our product category.	.57
The decision makers can clearly relate our brand to a certain product category.	.43
Market Performance; based on Homburg & Pflesser (2000); seven-point scale: "clearly worse" to "clearly better"	
Over the last three years, how has your SBU performed relative to your competitors with respect to customer loyalty?	.34
Over the last three years, how has your SBU performed relative to your competitors with respect to the acquisition of new customers?	.45
Over the last three years, how has your SBU performed relative to your competitors with respect to achieving the desired market share?	.72
Over the last three years, how has your SBU performed relative to your competitors with respect to achieving the desired growth?	.54
Return on Sales; seven-point scale: "clearly worse" to "clearly better"	
Over the last three years, how has your SBU performed relative to competitors with respect to return on sales?	n/a[a)]
Product Homogeneity; newly developed; seven-point scale: "strongly disagree" to "strongly agree"	
In our industry, it is difficult to differentiate from competitors through technical product characteristics	.31
With regard to functionality, our products are not very different from our competitor's products	.66
Our products and our competitor's products have the same benefits for the customers.	.62
Technological Turbulence; adapted from Jaworski & Kohli (1993); seven-point scale: "strongly disagree" to "strongly agree"	
The technology in our industry is changing rapidly.	.46
Technological changes provide big opportunities in our industry.	.68
A large number of new product ideas have been made possible through technological breakthroughs in our industry.	.35
Buying Center Size; newly developed; six-point scale: "1" to "10 or more"	
How many people in customer firms are typically involved in buying decisions regarding your products?	n/a[a)]
Buying Center Heterogeneity; adapted from Stoddard & Fern (2002); seven-point scale: "strongly disagree" to "strongly agree"	
Buying center members in typical customer firms have a differing professional background.	.53
Buying center members in typical customer firms have differing previous knowledge with respect to the purchase of our product.	.87
Buying center members in typical customer firms pursue different interests and priorities with the purchase of our products.	.42
Time Pressure; adapted from Kohli (1989); seven-point scale: "strongly disagree" to "strongly agree"	
When customers buy products from this category they typically feel pressured to reach a decision quickly.	.60
When customers buy products from this category their decision makers typically feel high time pressure.	.75
When customers buy products from this category they rarely have ample time to consider purchase-related information carefully.	.58
Technical Product Quality; newly developed, seven-point scale: "clearly worse" to "clearly better"	
Relative to competitors, how do your rate your SBU's technical product quality?	n/a[a)]
Service Quality; newly developed, seven-point scale: "clearly worse" to "clearly better"	
Relative to competitors, how do your rate the quality of your SBU's services?	.59
Relative to competitors, how do your rate the quality of your SBU's distribution network?	.42
Relative to competitors, how do your rate the quality of your SBU's logistic processes?	.44
SBU Size; seven-point scale: "less than 200" to "more than 10,000"	
How many employees work in your business unit?	n/a[a)]
Brand Coverage; three-point scale: "company brand", "family brand", "product brand"	
Is the most important brand in your SBU a company brand, a family brand, or a product brand?	n/a[a)]
Brand Share of Revenues; ten-point scale: "less than 10%" to "more than 90%"	
What was the brand share of SBU revenues of your most important brand in the last year?	n/a[a)]
Low Price Strategy; newly developed, seven-point scale: "strongly disagree" to "strongly agree"	
Our brand stands out from the competition by its focus on low prices.	n/a[a)]
Advertising Expenses; open-ended question	
What share of revenues does your SBU spend on advertising?	n/a[a)]

[a)] Construct measured through single indicator, item reliabilities cannot be computed.

APPENDIX 2: CORRELATIONS

	Mean	S.D.	AVE	CR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Brand Awareness	2.52	1.03	.61	.86	1.00															
2. Market Performance	2.94	.90	.59	.80	.38	1.00														
3. Return on Sales	3.39	1.24	-	-	.11	.42	1.00													
4. Product Homogeneity	3.35	1.31	.53	.77	-.07	-.15	-.17	1.00												
5. Technological Turbulence	3.86	1.3	.50	.74	.01	.14	.01	-.01	1.00											
6. Buying Center Size	2.69	.96	-	-	-.07	-.05	.05	.27	-.16	1.00										
7. Buying Center Heterogeneity	2.68	1.27	.61	.82	-.18	-.02	-.03	-.01	.13	-.07	1.00									
8. Time Pressure	4.93	1.32	.64	.84	-.14	-.08	.01	.26	.05	.17	.28	1.00								
9. Technical Product Quality	2.4	.89	-	-	.18	.39	.21	-.26	.06	-.09	-.01	-.03	1.00							
10. Service Quality	3.11	.95	.49	.74	.27	.63	.39	.08	.15	.03	.02	.22	.35	1.00						
11. SBU Size	3.41	2.09	-	-	.18	.21	.16	-.22	.19	-.15	-.08	-.26	.07	.02	1.00					
12. Brand Coverage	1.53	.68	-	-	.21	.13	.10	.17	.00	.21	-.07	.06	.02	.23	.04	1.00				
13. Brand Share of Revenues	6.25	3.24	-	-	-.33	-.10	-.05	-.08	.00	-.05	-.02	.04	-.03	-.22	-.05	-.58	1.00			
14. Low Price Strategy	4.78	1.49	-	-	.02	.14	.02	.12	.12	.13	-.03	.26	-.17	.12	-.17	-.07	.06	1.00		
15. Advertising Expenses	2.04	2.26	-	-	.09	.03	.09	.11	.01	-.01	-.13	.02	.09	-.05	-.07	-.08	.06	-.10	1.00	
16. Response Time	13.33	9.81	-	-	-.07	-.03	-.02	.13	-.03	-.07	.11	.03	-.10	-.12	-.20	.00	-.03	.07	-.01	1.00

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