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A Customer Perspective on Product Eliminations: How the Removal of Products Affects Customers and Business Relationships

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ABSTRACT

Regardless of the apparent need for product eliminations, many managers hesitate to act as they fear deleterious effects on customer satisfaction and loyalty. Other managers do carry out product eliminations, but often fail to consider the consequences for customers and business relationships. Given the relevance and problems of product eliminations, research on this topic in general and on the consequences for customers and business relationships in particular is surprisingly scarce. Therefore, this empirical study explores how and to what extent the elimination of a product negatively affects customers and business relationships. Results indicate that eliminating a product may result in severe economic and psychological costs to customers, thereby seriously decreasing customer satisfaction and loyalty. This paper also shows that these costs are not exogenous in nature. Instead, depending on the characteristics of the eliminated product these costs are found to be more or less strongly driven by a company's behavior when implementing the elimination at the customer interface.

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1 Introduction

In reaction to increasing customer demand for differentiated offerings, companies have significantly broadened and deepened their product portfolios, thereby binding resources and raising the complexity of internal processes in various functional areas (Putsis and Bayus 2001; Thonemann and Brandeau 2000). Moreover, many products turn out to be unprofitable sooner or later in their lifecycle, leading to a decrease in company earnings. Such financial and operational reasons, as well as strategic reasons (e.g., market exit), make the elimination of products a viable option for companies across all industries (Argouslidis and Baltas 2007; Avlonitis 1987).

Despite the apparent need for product eliminations, many managers hesitate to take action. Their reluctance arises mainly from the fear of causing a negative impact on customer loyalty - a concern typically raised by the sales force (Mather 1992). Those managers who are less hesitant often partially or completely overlook the adverse consequences of product eliminations for customers, thereby frequently “damaging important relationships” (van Hoek and Pegels 2006, p. 22). Such deleterious effects for customers and company-customer relationships may be particularly severe in a business-to-business (B2B) setting, as in this context, eliminated products often play a crucial role in the production process of customers (Avlonitis 1983; Karakaya 2000) and companies typically rely heavily on close relationships with their limited number of customers (Nielson 1998).

Despite the importance and the potential problems and drawbacks to product eliminations, surprisingly little research has explored this topic. The few existing studies take a company perspective on product eliminations by typically focusing on the decision making process (e.g., the degree of formalization or criteria for selecting products to be eliminated; Argouslidis and Baltas 2007; Avlonitis 1985, 1986) or on the actual withdrawal of the product from the portfolio (e.g., the extent of withdrawal; Harness and Marr 2001; Saunders and Jobber 1994).

By contrast, we are not aware of any study that analyzes product eliminations from a customer perspective. Adopting this perspective would, however, considerably advance academic understanding of how and to what extent eliminating a product negatively affects customers and their business relationship with the company. Filling these research gaps may also yield valuable insights into whether and how a company can mitigate unfavorable effects of a product

elimination. Researchers have made frequent calls for such studies (e.g., Harness and Harness 2004; Harness and Marr 2001). For example, Harness and Marr (2001, p. 433) claim that the focus of future research “has to be on how a product elimination is perceived by ... customers.” Such research would also address the “need to investigate what actions are needed for the firm to maintain good customer relations throughout the [product] deletion process” (Avlonitis, Hart, and Tzokas 2000, pp. 54-55).

To address these research gaps, we introduce a customer perspective on product eliminations to the marketing discipline. In particular, our study contributes to the literature by examining the types and extent of adverse consequences of a product elimination for customers and company-customer relationships. It also advances academic understanding of whether and how these adverse consequences may be alleviated by a company’s behavior during the implementation of a product elimination. To empirically investigate these issues, we conduct a large-scale cross-sectional study in a B2B setting. Studying this topic in such a setting is especially important because, as described before, eliminating a product in a B2B context may lead to particularly severe consequences for customers and company-customer relationships. Also, such a setting is particularly appropriate for examining eliminating companies’ behavior towards customers because, in contrast to a B2C context, in a B2B context the interaction between company and customers is usually direct and individualized. In sum, our study aims to shed initial light on the aftermath of a product elimination on the customer side, to provide insight to managers on how to handle the elimination of a product at the customer interface, and to serve as a valuable starting point for future research on this important but neglected topic.

2 Theoretical Background

Our research is primarily rooted in social exchange theory (e.g., Homans 1958; Thibaut and Kelley 1959), which has been used extensively to study individuals or organizations in exchange relationships (e.g., Cropanzano and Mitchell 2005; Dwyer, Schurr, and Oh 1987).

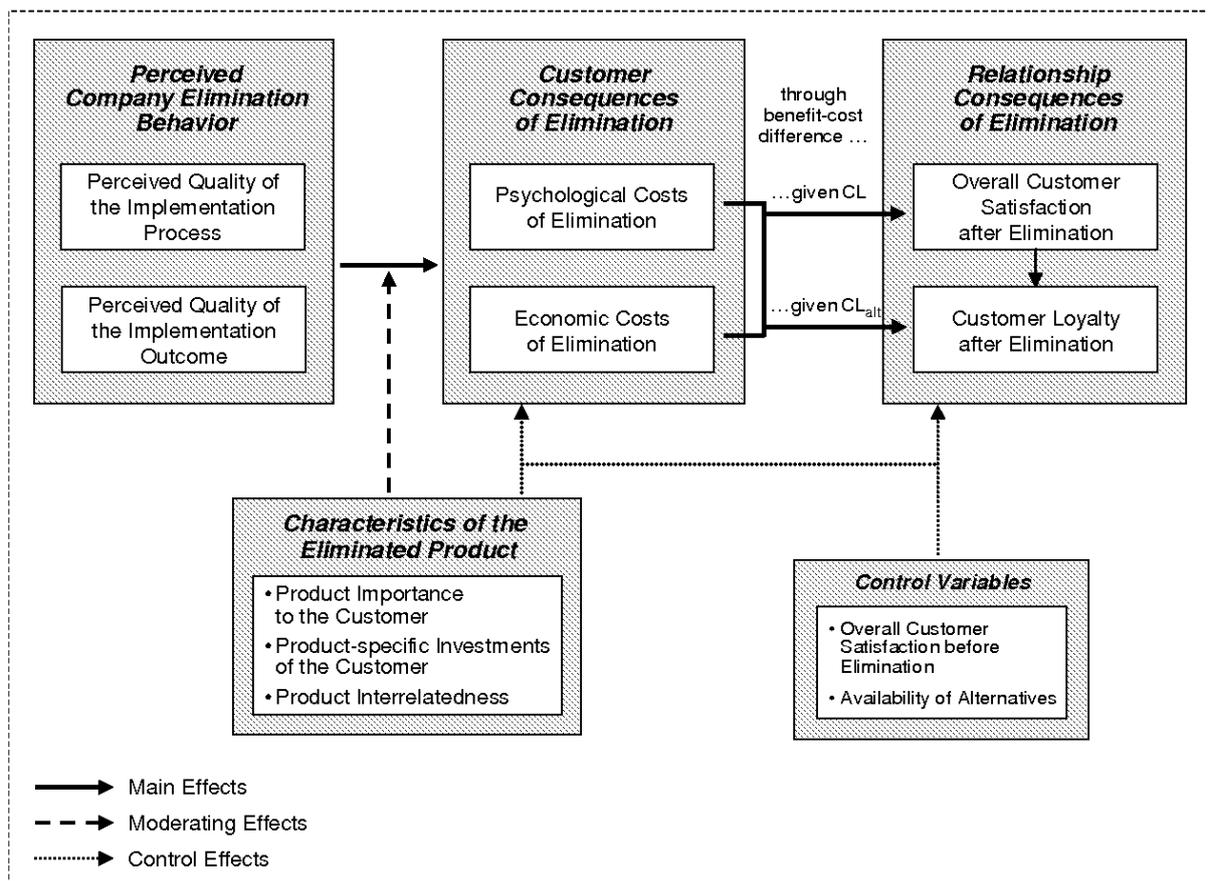
¹ According to this theory, the attitude and behavior of an exchange partner (e.g., a customer) arises from a comparison of economic and psychological costs and benefits experienced in a relationship. Whereas economic costs and benefits relate to the “hard factors” of an exchange, such as financial means, psychological benefits and costs refer to the “soft factors”, such as reliability, flexibility, and cooperativeness (e.g., Foa and Foa 1974, 1980). The exchange partner evaluates the perceived benefit-cost difference against a specific comparison level that is influenced by various situational factors. The more the exchange partner’s perceived benefit-cost difference exceeds his/her standard comparison level (CL), the higher is the exchange partner’s satisfaction with the relationship. Similarly, the more an exchange partner’s perceived benefit-cost difference surpasses his/her comparison level for alternatives (CL_{alt}), the more likely the exchange partner is to remain in the relationship.

In our study, we apply this reasoning to a product elimination context. Specifically, we argue that the elimination of a product by one exchange partner - a company - may lead to economic and psychological costs for the other partner - a customer. These costs are likely to affect customer satisfaction and loyalty through influencing the customer’s perceived benefit-cost difference of the relationship (BCD) that is evaluated against the customer’s standard comparison level (CL) and comparison level for alternatives (CL_{alt}), respectively (see also Figure 1). Social exchange theory also suggests that the customer’s elimination-induced costs themselves may depend on the company’s behavior during the implementation of the elimination.

3 Conceptual Framework and Constructs

Our unit of analysis is a product elimination, which is defined as a company’s permanent removal of a product from its portfolio without replacing it with a new product.² Drawing on the prior discussion of social exchange theory, our framework centers on the consequences of a product elimination for the customer - that is, the psychological and economic costs of the elimination (see Figure 1).

FIGURE 1
Framework and Constructs



Psychological costs of the elimination reflect the degree to which the customer becomes uncertain about the eliminating company owing to the product elimination, as the elimination can raise customer doubts about the wisdom of engaging in a business relationship with this company (Festinger 1957; Karakaya 2000). These doubts represent dissonant cognitions and produce an unpleasant inner state of tension or uncertainty about the eliminating company's reliability, flexibility, and cooperativeness (e.g., Arend 2006; Dwyer, Schurr, and Oh 1987; Noordewier, John, and Nevin 1990). *Economic costs of the elimination* reflect the degree of a customer's perceived economic burden and expenditures due to the product elimination. These costs include both perceived direct financial costs and time-related costs (e.g., Karmarkar 1987; Montgomery, Moore, and Urbany 2005). For example, an elimination can entail significant costs for searching and evaluating substitute products (e.g., Williamson 1979, 1985), and unavailability of an adequate substitute product may force the customer to develop such a product in house. Moreover, at the beginning, the substitute product requires increased quality assurance and investments for set-up and downtime (e.g., Cannon and Homburg 2001). Also, an elimination may lead to costs owing to lost synergies (e.g., Zajac and Olsen 1993) or the maladaptation of the new product (e.g., Malone 1987).

On the one hand, we aim to analyze whether - and to compare to what extent - each of these two types of costs drives the consequences of the elimination for the company-customer relationship - that is, the *overall customer satisfaction after the elimination* (the degree to which the customer perceives after the elimination that the eliminating company's overall performance in the business relationship exceeds expectations; Anderson and Sullivan 1993) and the *customer loyalty after the elimination* (the degree to which the customer continues the business relationship after the elimination and intends to do so in the future; Mittal and Kamakura 2001).

On the other hand, we also strive to analyze whether - and to compare to what extent - each of these two types of costs is itself driven by the eliminating firm's implementation process and outcome. The quality concept of Grönroos (1983, 1984) and related work (e.g., Bell, Auh, and Smalley 2005; Dabholkar and Overby 2005) suggest that when assessing a firm's behavior during the implementation of an elimination, a customer draws on perceptions of the *quality of the implementation process*, or the degree to which the firm acts in an adequate manner, and on perceptions of the *quality of the implementation outcome*, or the degree to which the firm offers an appropriate compensation. In our study, the two constructs include and structure a variety of

criteria that a customer uses to evaluate an eliminating firm's behavior.

Our framework also accounts for *key characteristics of the eliminated product* (importance to the customer, specific investments of the customer, and interrelatedness with other products purchased from the firm). They are expected to affect the degree to which the eliminating firm's implementation behavior in fact influences the consequences of the elimination for the customer. In addition, our framework accounts for a potential direct influence of these characteristics on customer and relationship consequences of the elimination. Finally, it also includes additional *control variables* (overall customer satisfaction before the elimination, availability of alternatives).

4 Hypotheses Development

4.1 Hypotheses on Main Effects

Drawing on our discussion of social exchange theory, we subsequently argue that a customer's perceived costs of the elimination are shaped by the eliminating company's implementation behavior (H_1 and H_2). These costs in turn decrease the customer's perceived benefit-cost difference of the relationship and thus are assumed to jeopardize the company-customer relationship (H_3 , H_4 , and H_5).

The *perceived quality of the implementation process* refers to the degree to which the customer perceives that the eliminating firm has acted in an acceptable manner when executing the elimination. It covers the timeliness of the announcement, customer decision control over the exact date of elimination and compensation offered, explanation of reasons for the elimination, and the company's effort to help the customer (e.g., Avlonitis 1983; Tax, Brown, and Chandrashekar 1998).

It is generally accepted that an exchange partner (e.g., a customer) can reduce uncertainty about another exchange partner (e.g., a company) by means of screening (Darby and Karni 1973; Stiglitz 1975). In a product elimination context, a customer's perception that a company has used an appropriate process to implement an elimination serves as a valuable indicator of the company's reliability, flexibility, and cooperativeness, thereby decreasing uncertainty about the firm and thus the customer's *psychological costs* of the elimination (Mishra, Heide, and Cort 1998). For example, a customer's belief that the announcement of the elimination is timely (Avlonitis 1983) fosters the impression that the company cares about the customer, thus reducing uncertainty about the company's reliability. Further, a customer who experiences decision control over the exact date of elimination and the compensation offered (e.g., Tax, Brown, and Chandrashekar 1998) perceives the company as willing and able to adequately react to the customer's needs, which decreases uncertainty about the company's flexibility. In addition, a customer who finds acceptable the company's explanation of the reasons for the elimination, accompanied by company employees' sincere efforts to help the customer (e.g., Avlonitis 1983), will perceive the company as seriously interested in maintaining the business relationship, thereby reducing uncertainty about the company's cooperativeness.

Moreover, experiencing an appropriate implementation process may also decrease the customer's *economic costs* of the elimination. For example, a timely announcement of the elimination provides sufficient time to find an adequate substitute product, so that the customer need not risk making suboptimal choices under time pressure (Avlonitis 1983). Moreover, a customer's opportunity to participate in the decision on the compensation offered (e.g., Tax, Brown, and Chandrashekar 1998) helps to find the support that best suits the customer's needs, thus curtailing additional costs for quality assurance or set-up and downtime (e.g., Cannon and Homburg 2001). In sum, we predict:

H₁: As perceived quality of the implementation process increases, a customer's (a) psychological costs of the elimination and (b) economic costs of the elimination decrease.

The *perceived quality of the implementation outcome* reflects the degree to which the customer perceives that the eliminating firm has provided appropriate compensation when executing the elimination. It captures the extent of financial and non-financial support for the customer as well as the consistency of this support with customer requirements (e.g., Smith, Bolton, and Wagner 1999). Such support includes the offer of alternative products, the stocking of replacement parts for the eliminated product or the help to find an alternative supplier, and extend to monetary compensation for customer investments needed owing to the elimination (e.g., Argouslidis and Baltas 2007).

A customer's perception that a company has provided a high-quality implementation outcome is likely to act as an important signal of the company's reliability, flexibility, and cooperativeness, thereby reducing uncertainty about the company and thus the customer's *psychological costs* of the elimination (e.g., Festinger 1957; Stiglitz 1975). For example, a customer's perceptions of having received an appropriate monetary compensation for investments needed owing to the elimination (e.g., in the integration of the substitute product in the production process) creates the impression that the company strives to support the customer even at its own monetary expense. This impression reduces uncertainty about the company's reliability (e.g., Arend 2006). Further, being offered adequate alternative products or having replacement parts for the eliminated product stocked by the eliminating company (e.g., Avlonitis 1983; Vyas 1993) signals the customer that the company continues to be willing and able to effectively respond to the customer's requirements. The result is decreased uncertainty about the company's flexibility (e.g., Noordewier, John, and Nevin 1990). Also, receiving assistance in

finding alternative suppliers (e.g., Argouslidis and Baltas 2007) signals that the company is sincerely motivated to help the customer in difficult situations, thus decreasing uncertainty about the company's cooperativeness (e.g., Dwyer, Schurr, and Oh 1987).

In addition, receiving an adequate implementation outcome from the company may also reduce the customer's *economic costs* of the elimination. For instance, obtaining an offer of appropriate alternative products or of replacement parts for the eliminated product (e.g., Avlonitis 1983) can avoid a search for or an in-house development of alternative products or replacement parts, which in turn mitigates the customer's financial burden and expenditures owing to the elimination. Likewise, obtaining support from the company to find alternative suppliers (e.g., Argouslidis and Baltas 2007) or receiving adequate monetary compensation for investments induced by the elimination may also decrease the customer's economic costs. Therefore, we propose:

H₂: As perceived quality of the implementation outcome increases, a customer's (a) psychological costs of the elimination and (b) economic costs of the elimination decrease.

As mentioned, a customer's perceived psychological and economic costs of an elimination inevitably increase the perceived overall costs of the relationship with the eliminating company. The result is a decrease in the customer's perceived benefit-cost difference of the relationship, which reduces the probability that the benefit-cost difference exceeds the customer's standard comparison level (CL), leading to a lower overall customer satisfaction with the company after the elimination (e.g., Anderson and Sullivan 1993; Thibaut and Kelley 1959). Hence, we hypothesize:

H₃: As a customer's (a) psychological costs of the elimination and (b) economic costs of the elimination increase, overall customer satisfaction after the elimination decreases.

Following the prior theoretical discussion, an exchange partner becomes disloyal if the perceived benefit-cost difference in the relationship does not meet the comparison level for alternatives (CL_{alt}). Accordingly, the higher the customer's perceived economic and psychological costs of an elimination, the more likely the customer's perceived benefit-cost difference falls below the comparison level for alternatives, thereby decreasing customer loyalty after the elimination (e.g., Mittal and Kamakura 2001; Thibaut and Kelley 1959). Therefore, we predict:

H₄: As a customer's (a) psychological costs of the elimination and (b) economic costs of the

elimination increase, customer loyalty after the elimination decreases.

As social exchange theory proposes and prior research supports (e.g., Anderson and Sullivan 1993; Mittal and Kamakura 2001), the likelihood that a customer will remain loyal after an elimination increases with the level of overall customer satisfaction after the elimination. Hence, we expect:

H₅: As overall customer satisfaction after the elimination increases, customer loyalty after the elimination also increases.

4.2 Hypotheses on Moderating Effects

In the context of a product elimination, the following three product characteristics are particularly interesting.

Importance of the product to the customer. This construct captures the relevance of the eliminated product to the customer's production process as well as the severity of customer problems in case the product malfunctions or is unavailable (e.g., Möller and Laaksonen 1986).

Product-specific investments of the customer. This characteristic relates to customer investments that are specific to the eliminated product, as they are partially or completely irreversible and thus are sunk when the product is eliminated. Such investments were initially made to effectively and efficiently purchase and use the product (e.g., Poppo 2003) and involve physical assets, processes, and people (e.g., Heide and John 1990).

Product interrelatedness. Finally, it is also important to account for the degree to which the customer has purchased and used the eliminated product together with other products of the eliminating company, as well as the degree to which this combined purchase and use benefitted the customer in financial and time savings as well as product synergies (e.g., Cannon and Homburg 2001).

We now examine whether and how these characteristics moderate the effect of the perceived quality of the company's implementation process and outcome, respectively, on a customer's perceived psychological costs (H₆ and H₈) and economic costs (H₇ and H₉) of the elimination.

Perceived quality of implementation process on psychological costs. As noted, a customer's perception that an eliminating company engages in a high-quality implementation process can serve as a valuable indicator of the company's reliability, flexibility, and cooperativeness,

thereby decreasing the psychological costs of the elimination (e.g., Akerlof 1970; Mishra, Heide, and Cort 1998). If an eliminated product is highly important to the customer (e.g., for the production process) (Möller and Laaksonen 1986), associated with high customer investments specific to the product (and thus sunk in the case of elimination) (Poppo 2003), or strongly interrelated with other products of the eliminating company in terms of purchasing and use (Cannon and Homburg 2001), the customer's sensitivity to indicators of the eliminating company's reliability, flexibility, and cooperativeness is likely to be especially high. Consequently, in such a situation, the perceived quality of the eliminating company's implementation process (e.g., in terms of the timeliness of the announcement or the effort to help the customer) may have a particularly strong impact on the customer's psychological costs (e.g., Arend 2006; Noordewier, John, and Nevin 1990). Thus, we predict:

H₆: The impact of perceived quality of the implementation process on a customer's psychological costs of the elimination increases, when the (a) importance of the product to the customer, (b) product-specific investments of the customer, and (c) product interrelatedness increase.

Perceived quality of implementation process on economic costs. As described, a product's elimination can cause significant financial damage to a customer owing to, for example, interruptions of the production process or the loss of investments and benefits. This is particularly likely if the eliminated product is highly important to the customer (Möller and Laaksonen 1986), associated with high specific investments of the customer (Poppo 2003), or strongly interrelated with other products of the eliminating firm in terms of purchasing and use (Cannon and Homburg 2001). In such a situation, the customer's need for an adequate implementation process is likely to be particularly high. For instance, a timely announcement of the elimination (Avlonitis 1983) is especially crucial to allow the customer time to find an appropriate substitute product and thus minimize the economic costs of the elimination. Additionally, in such a situation, the customer's opportunity to influence the firm's decision on the compensation provided (e.g., Tax, Brown, and Chandrashekar 1998) is especially important, as the right support may relieve the customer of considerable economic burden and expenditures (Cannon and Homburg 2001). Therefore, we predict:

H₇: The impact of perceived quality of the implementation process on a customer's economic costs of the elimination increases, when the (a) importance of the product to the customer,

(b) product-specific investments of the customer, and (c) product interrelatedness increase.

Perceived quality of implementation outcome on psychological costs. As described, being confronted with the elimination of a product that is highly important, associated with considerable specific investments, or strongly interrelated with other products of the eliminating company may make the customer particularly sensitive to indicators of the eliminating company's reliability, flexibility, and cooperativeness. In such a context, the perceived quality of the eliminating company's implementation outcome is thus likely to have a particularly strong impact on the customer's psychological costs of the elimination (e.g., Arend 2006; Noordewier, John, and Nevin 1990). For example, being offered or not offered appropriate financial compensation for investments needed owing to the elimination may have a particularly strong impact on the customer's evaluation of the company's reliability. Also, being provided (or not) with adequate alternative products, being assisted (or not) in finding alternative suppliers, and having replacement parts stocked by the company (or not) (e.g., Argouslidis and Baltas 2007) are all likely to be particularly crucial for the customer's perception of the company's flexibility and cooperativeness. Hence, we hypothesize:

H₈: The impact of perceived quality of the implementation outcome on a customer's psychological costs of the elimination increases, when the (a) importance of the product to the customer, (b) product-specific investments of the customer, and (c) product interrelatedness increase.

Perceived quality of implementation outcome on economic costs. When the eliminated product is highly important, associated with significant specific investments, or strongly interrelated with other products of the eliminating firm, the customer's economic costs are particularly strongly influenced by whether (or not) receiving adequate compensation from the eliminating firm. For example, when the product is highly important, being offered appropriate alternative products or being helped to find alternative suppliers (e.g., Avlonitis 1983; Argouslidis and Baltas 2007) is especially crucial to avoid severe disruptions of the production process and thus to keep costs of set-up and downtime at a minimum. Moreover, if product-specific investments are high, obtaining financial compensation is particularly important to make up for potential losses due to the specificity of investments. Also, when the eliminated product is strongly interrelated with other products purchased from the eliminating firm, being provided with adequate alternative products (e.g., Avlonitis 1983) is especially crucial,

as in such a situation, this particularly reduces the customer's costs of opportunity (e.g., due to lost synergies; Zajac and Olsen 1993). Thus, we predict:

H₉: The impact of perceived quality of the implementation outcome on a customer's economic costs of the elimination increases, when the (a) importance of the product to the customer, (b) product-specific investments of the customer, and (c) product interrelatedness increase.

5 Methodology

5.1 Data Collection and Sample

We conducted a large-scale survey in a typical mid-European country (Germany). In a first step, we obtained from a commercial provider a sample of 1,346 firms from industries in a B2B setting. Within these firms, we sought informants of who act as the key interface with eliminating companies and, at the same time, have an overview of internal and relationship-related consequences of product eliminations. Pre-study field interviews (n = 24) revealed that procurement managers are by far the most appropriate informants. Hence, for each firm in our sample, we aimed to identify a procurement manager and were successful in 1,153 cases.

In a second step, a questionnaire was mailed to these managers. Three weeks later, we started follow-up telephone calls to verify that the managers had received the questionnaire and to remind them to respond. In the survey instructions, we provided respondents with our definition of “product elimination” and requested them to relate their answers to a recent elimination with which their firm was confronted and in which they were involved. This elimination should refer to a product their firm had repeatedly, but not necessarily exclusively, purchased from the eliminating company in the past to use it in the production process (either as a component of a manufactured product or as a raw material). This elimination also had to be typical for the customer with regard to the type of product and should not have been carried out because of strategic reasons, such as market exit or bankruptcy. Moreover, we asked respondents to rate how competent they felt to answer the questions and discarded 14 questionnaires with ratings of lower than five on a seven-point scale. Overall, we received 248 useable questionnaires, for a response rate of 21.5%. Tests provide no evidence for non-response bias and informant bias.³

Table 1 offers an overview of the characteristics of the customer firms in our sample. Other important sample characteristics relate to the eliminated products. Table 2 indicates that these products were relatively important to the production process of customers (5.82 on a seven-point scale)⁴. Moreover, these products were associated with a rather medium degree of specific customer investments (4.16 on a seven-point scale) and of customer purchase and use together with other products of the same supplier (3.34 on a seven-point scale).

TABLE 1
Sample Composition

A: Industry	
Electronics	21%
Chemicals	19%
Machine Building	18%
Metal Processing	16%
Automotive	12%
Building Materials	10%
Others	4%
B: Annual Revenues ^a	
< \$ 50 million	9%
\$50 - \$99 million	21%
\$100 - \$199 million	22%
\$200 - \$499 million	21%
\$500 - \$999 million	13%
\$1,000 - \$2,000 million	5%
> \$2,000 million	10%
C: Employees ^a	
< 200	14%
200 - 499	32%
500 - 999	23%
1,000 - 2,499	16%
2,500 - 5,000	8%
> 5,000	8%

^a Percentages do not add up to 100% due to rounding errors.

5.2 Measure Development and Assessment

Most scales had to be newly created on the basis of a literature review and in-depth interviews with practitioners. We pre-tested the resultant questionnaire and refined it on the basis of comments from scholars and practitioners. The Appendix contains a complete list of items, including sources used for scale development. Seven-point rating scales were applied for all items.

We assessed the perceived quality of the implementation process and outcome with six and five indicators, respectively. The customer's psychological and economic costs of the elimination were operationalized by three and four indicators, respectively. Customer satisfaction after the elimination was measured with three indicators and customer loyalty after the elimination with five indicators. As to the key characteristics of the eliminated product, the importance of the product, product-specific investments, and product interrelatedness were assessed with two, four, and four indicators, respectively. With regard to the control variables, we measured customer satisfaction before the elimination by three indicators and the availability of alternatives by four indicators.

Using confirmatory factor analysis, we assessed measure reliability and validity. Results show acceptable psychometric properties for all constructs (Bagozzi and Yi 1988; Nunnally 1978) (see Table 2 and 3). Chi-square difference tests and the criterion proposed by Fornell and Larcker (1981) also indicate no problems with respect to discriminant validity (see Table 3).

TABLE 2
Construct Measures

Construct	Number of Items	Coefficient Alpha	Composite Reliability	Average Variance Extracted	Mean	Standard Deviation
<i>Perceived Company Elimination Behavior</i>						
Perceived Quality of the Implementation Process	6	.89	.89	.58	4.20	1.58
Perceived Quality of the Implementation Outcome	5	.90	.90	.65	3.38	1.65
<i>Customer Consequences of Elimination</i>						
Psychological Costs of the Elimination	3	.96	.96	.90	3.63	1.94
Economic Costs of the Elimination	4	.94	.95	.81	4.22	1.76
<i>Relationship Consequences of Elimination</i>						
Overall Customer Satisfaction after the Elimination	3	.90	.90	.75	4.23	1.62
Customer Loyalty after the Elimination	5	.88	.88	.62	3.65	1.71
<i>Characteristics of the Eliminated Product</i>						
Importance of Product to the Customer	2	.80	.81 ^a	.68 ^a	5.82	1.14
Product-specific Investments of the Customer	4	.92	.92	.74	4.16	1.65
Product Interrelatedness	4	.91	.91	.73	3.34	1.97
<i>Control Variables</i>						
Availability of Alternatives	4	.83	.83	.55	4.05	1.48
Overall Customer Satisfaction before the Elimination	3	.88	.89	.73	5.04	1.32

^a Because this construct was measured with two items, a separate measurement model would not be identified. Thus, composite reliability and average variance extracted were computed based on information taken from the overall model, which includes the measurement model for each construct and the structural model (Bollen 1989).

TABLE 3
Correlations and Average Variances Extracted (AVE)

	Correlations (Squared Correlations)											
	(AVE)	1	2	3	4	5	6	7	8	9	10	11
1. Perceived Quality of the Implementation Process	(.58)	-										
2. Perceived Quality of the Implementation Outcome	(.65)	.45 (.20)	-									
3. Psychological Costs of the Elimination	(.90)	-.50 (.25)	-.38 (.14)	-								
4. Economic Costs of the Elimination	(.81)	-.27 (.07)	-.41 (.17)	.22 (.05)	-							
5. Overall Customer Satisfaction after the Elimination	(.75)	.46 (.22)	.32 (.10)	-.51 (.26)	-.27 (.07)	-						
6. Customer Loyalty after the Elimination	(.62)	.40 (.16)	.26 (.07)	-.46 (.21)	-.13 (.02)	.66 (.44)	-					
7. Importance of Product to the Customer	(.68)	.02 (.00)	-.08 (.01)	.13 (.02)	.20 (.04)	-.01 (.00)	.02 (.00)	-				
8. Product-specific Investments of the Customer	(.74)	.07 (.01)	.15 (.02)	.06 (.00)	.08 (.01)	.14 (.02)	.24 (.06)	.27 (.07)	-			
9. Product Interrelatedness	(.73)	.10 (.01)	.20 (.04)	-.09 (.01)	-.01 (.00)	.09 (.01)	.19 (.04)	.03 (.00)	.22 (.05)	-		
10. Availability of Alternatives	(.55)	-.02 (.00)	-.30 (.09)	.07 (.00)	-.34 (.12)	-.02 (.00)	-.12 (.01)	.07 (.00)	.12 (.01)	-.08 (.01)	-	
11. Overall Customer Satisfaction before the Elimination	(.73)	.45 (.20)	.21 (.04)	-.20 (.04)	-.09 (.01)	.59 (.34)	.47 (.22)	.16 (.02)	.13 (.02)	.00 (.00)	.05 (.00)	-

6 Results

6.1 Results of Descriptive Analyses

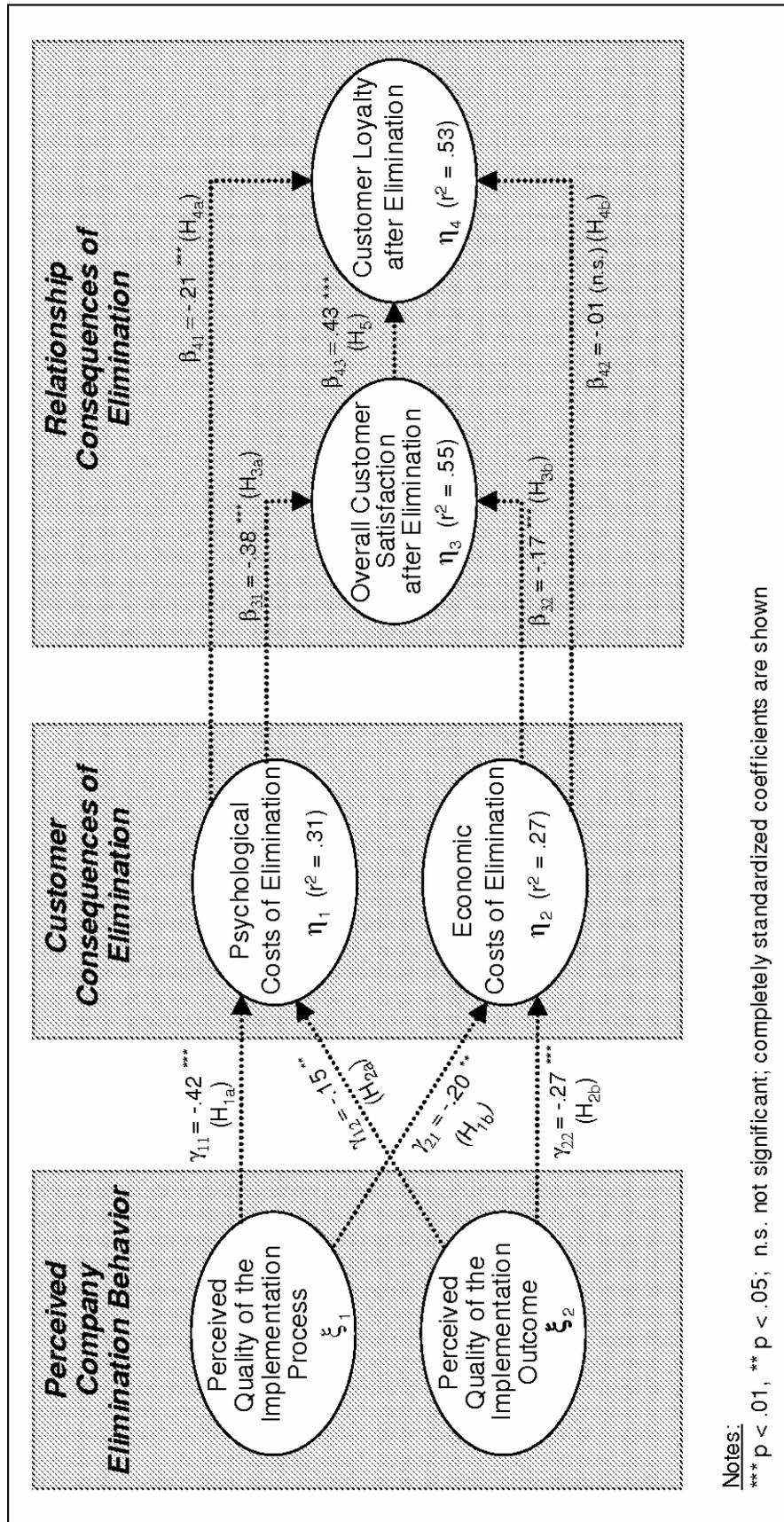
Although in the case of rating scale data inferences about absolute sizes generally have to be treated with some caution, the descriptive results in Table 2 can at least provide some initial answers to our question on the extent to which a product elimination negatively affects customers and company-customer relationships.

First, the mean values of the constructs related to *customer consequences* of an elimination indicate that a firm's removal of a product causes relatively severe damage to customers, as it typically results in noteworthy psychological costs (3.63) and economic costs (4.22) on the customer side. Second, the mean values of the constructs related to *relationship consequences* of an elimination show that a company's removal of a product seems to be often associated with lasting damage to company-customer relationships. Specifically, our findings reveal a rather large and highly significant gap ($p < .01$) between a customer's overall satisfaction with the company *before* the elimination (5.04) and *after* the elimination (4.23). The rather low mean value of a customer's loyalty after the elimination (3.65) provides further empirical evidence of considerable adverse consequences of an elimination for company-customer relationships. From an eliminating company's perspective, these results underscore the need to proactively mitigate such adverse consequences through adequate implementation behavior. However, as the mean values of the constructs related to *company elimination behavior* indicate, customers on average rate the quality of the implementation process (4.20) and outcome (3.38) as rather mediocre.

6.2 Results of Hypotheses Testing

We tested our hypotheses using structural equation modeling. The overall fit measures ($\chi^2/df = 2.20$, NNFI = .93, CFI = .94, RMSEA = .066, SRMR = .073) indicate an appropriate fit of our model with the observed data. Figure 2 displays the parameter estimates for the main effects.

FIGURE 2
 Results of the Hypotheses Testing (Main Effects)



Results related to main effects. H_{1a} and H_{2a} predict that a customer's psychological costs of the elimination are negatively associated with the perceived quality of the implementation process and outcome, respectively. Both hypotheses are confirmed by the data ($p < .01$ and $p < .05$, respectively). Similarly, we find support for H_{1b} ($p < .05$) and H_{2b} ($p < .01$), which suggests that a customer's economic costs of the elimination are negatively influenced by the perceived quality of the implementation process and outcome, respectively. Moreover, as hypothesized, we find that both psychological costs (H_{3a}) and economic costs (H_{3b}) in turn significantly reduce overall customer satisfaction after the elimination ($p < .01$ in both cases). However, whereas the data confirm that psychological costs negatively affect customer loyalty after the elimination (H_{4a} , $p < .01$), we find no support for the expected negative effect of economic costs on customer loyalty after the elimination (H_{4b} , $p > .10$). Finally, as predicted, overall customer satisfaction after the elimination has a positive impact on customer loyalty after the elimination (H_5 , $p < .01$).⁵

Results of mediation test. To test whether the effect of perceived company elimination behavior on overall customer satisfaction is fully mediated by customer costs of the elimination (see Figure 2 and the Full Mediation Model in Table 4), we conducted additional analyses (e.g., James, Mulaik, and Brett 2006; MacKinnon et al. 2002). Specifically, we introduced direct effects of the perceived quality of both the implementation process and the implementation outcome on overall customer satisfaction after the elimination (see the Partial Mediation Model in Table 4). As expected, the newly established direct effects are not significant, while the indirect effects remain significant. Also, the inclusion of the newly established direct effects did not significantly improve model fit assessed by the χ^2 test for absolute fit ($\Delta\chi^2 = 2.10$, $p > .10$). Moreover, we estimated a model that includes corresponding direct effects, but no indirect effects (see the No Mediation Model in Table 4). Compared to our hypothesized model, this model shows a significantly worse fit to the data ($\Delta\chi^2 = 95.67$, $p < .01$). In summary, these findings indicate that the effect of perceived company elimination behavior on overall customer satisfaction is *fully* mediated by the customer's costs of the elimination, thus highlighting the importance of the latter constructs for research and practice.

TABLE 4
Results of Mediation Test

	Alternative Models		
	Full Mediation Model ^{a)}	Partial Mediation Model	No Mediation Model
Specified Effects of Perceived Company Elimination Behaviors on Overall Customer Satisfaction after the Elimination	Only indirect effects	Direct and indirect effects	Only direct effects
Degrees of Freedom (df)	812	810	814
Δ df to Full Mediation Model	-	2	2
Chi Square Value(χ^2)	1782.37	1780.27	1878.04
$\Delta\chi^2$ to Full Mediation Model	-	2.10 (n.s.)	95.67 ***

Notes:

^{a)} corresponds to hypothesized model (see Figure 2).

n.s. not significant; *** p < .01

Results related to moderating effects. We tested the moderating hypotheses by including latent interaction terms between the moderator variables and the respective independent variable in the model (Cortina, Chen, and Dunlap 2001; Marsh, Wen, and Hau 2004). Table 5 provides an overview of the results.

TABLE 5
Results of the Hypotheses Testing (Moderating Effects)

Moderators	Predictors			
	Perceived Quality of the Implementation Process		Perceived Quality of the Implementation Outcome	
	Psychological Costs of the Elimination	Economic Costs of the Elimination	Psychological Costs of the Elimination	Economic Costs of the Elimination
	H _{6a-c}	H _{7a-c}	H _{8a-c}	H _{9a-c}
Product Importance				
Predictor	-.41 ***	-.15 **	-.19 ***	-.26 ***
Moderator	.10 *	.15 **	.12 **	.19 ***
Interaction (= Predictor x Moderator)	-.06 n.s.	-.03 n.s.	-.09 *	-.15 **
Product-specific Investments				
Predictor	-.44 ***	-.17 ***	-.20 ***	-.28 ***
Moderator	.12 **	.06 n.s.	.11 *	.05 n.s.
Interaction (= Predictor x Moderator)	-.12 **	-.08 n.s.	.03 n.s.	-.18 ***
Product Interrelatedness				
Predictor	-.42 ***	-.16 **	-.20 ***	-.28 ***
Moderator	-.04 n.s.	.09 *	-.04 n.s.	.08 n.s.
Interaction (= Predictor x Moderator)	.00 n.s.	-.12 **	.04 n.s.	-.13 **

Notes:

* p < .10; ** p < .05; *** p < .01; n.s. not significant; completely standardized coefficients are shown

Overall, six of 12 interaction terms are significant, providing reasonable empirical support for our general assumption that product characteristics influence the degree to which customer consequences (i.e., psychological and economic costs) and in turn relationship consequences (i.e., satisfaction and loyalty) of an elimination are driven by the eliminating firm's implementation behavior.

Specifically, H₆ proposed that with increasing importance of the product to the customer (H_{6a}), product-specific investments of the customer (H_{6b}), and product interrelatedness (H_{6c}), the

perceived quality of the implementation process has a stronger negative impact on a customer's psychological costs. As expected, results in each case show a negative estimate for the perceived quality of the implementation process. However, because the interaction term for H_{6a} and H_{6c} is not significant ($p > .10$), we find no empirical evidence for these hypotheses. By contrast, the interaction term for H_{6b} is negative and significant ($p < .05$), thus confirming this hypothesis.

H₇ suggested that the negative impact of the perceived quality of the implementation process on a customer's economic costs increases with product importance (H_{7a}), product-specific investments (H_{7b}), and product interrelatedness (H_{7c}). As predicted, in all cases the estimates for the perceived quality of the implementation process and the corresponding interaction term are negative. Whereas the interaction term is significant for H_{7c} ($p < .05$), we find no statistical support for H_{7a} ($p > .10$) and H_{7b} ($p > .10$).

With regard to the impact of the *perceived quality of the implementation outcome* on a customer's psychological costs, we proposed a stronger negative impact with increasing product importance (H_{8a}), product-specific investments (H_{8b}), and product interrelatedness (H_{8c}). While for H_{8a} ($p < .10$), the corresponding interaction term is negative and significant and thus supports the related hypothesis, we find no empirical evidence for H_{8b} ($p > .10$) and H_{8c} ($p > .10$).

Finally, we predicted that the negative impact of the perceived quality of the implementation outcome on a customer's economic costs enhances with product importance (H_{9a}), product-specific investments (H_{9b}), and product interrelatedness (H_{9c}). In all cases we find a negative estimate for the perceived quality of the implementation outcome. Also, the corresponding interaction terms are all negative and significant ($p < .05$, $p < .01$, and $p < .05$, respectively), thus confirming these hypotheses.⁶

Thus, overall, we find empirical evidence for a moderating role of all three product characteristics: Product importance solely affects the impact of the implementation outcome. By contrast, the two other product characteristics influence the impact of both the implementation process and the implementation outcome. Whereas product-specific investments moderate the effect of implementation process on psychological costs and the effect of implementation outcome on economic costs, product interrelatedness exclusively influences the effect of the implementation process and the implementation outcome, respectively, on economic costs. In the discussion section, we will elaborate on this pattern of findings in more detail.

Results of tests of common method bias. As the data for measuring the independent and

dependent constructs were obtained from the same source, the strengths of the observed relationships between these constructs (see Figure 2) may be inflated or deflated significantly by common-method variance. Thus, we followed the advice of Podsakoff et al. (2003) who are recognized for their “excellent guidelines ... to estimate and control for common method bias” (Vogel, Evanschitzky, and Ramaseshan 2008, p. 102). For the research setting of our study, the authors recommend a single-common-method-factor approach. Using this approach is widely accepted in the marketing literature (e.g., MacKenzie, Podsakoff, and Fetter 1993; Ye, Marinova, and Singh 2007) and requires adding a first-order factor to the model with all of the independent and dependent construct measures as indicators. Findings show that, compared to the original model, all significant structural parameters continue to be significant in the same direction and all non-significant structural parameters continue to be non-significant. Thus, the pattern of relationships between constructs remains stable, indicating that common-method variance is not a notable problem in our study.

Results of tests of generality of findings. Using a multi-level approach, also known as hierarchical linear modelling (Bryk and Raudenbush 2002), we also tested the generality of our findings across industries. By modelling industry membership at the upper level (level 2) and the other variables at the lower level (level 1), this approach allows to consider the cross-sectional nature of our sample, or in other words, the hierarchical nature of our data set (as several customers are nested within one industry). Results indicate that the pattern of structural relationships closely parallels the previously observed pattern – that is, estimates of the effects that were previously found to be significant remain significant and vice versa, supporting the generality of our findings.

7 Discussion

7.1 Research Issues

A first important result of our study relates to the finding that a company's withdrawal of a product typically has serious negative consequences for its customers and for company-customer relationships. Specifically, when being confronted with an elimination, customers seem to face substantial psychological costs (e.g., uncertainty about the company's reliability and flexibility) and economic costs (e.g., costs of finding and integrating a substitute product) (see Table 2), which in turn negatively affect overall customer satisfaction and customer loyalty (see Figure 2). Interestingly, compared to economic costs, psychological costs tend to be more detrimental with respect to their impact on the company-customer relationship. Apparently, customers' perceived loss of long-term relational benefits, such as confidence in a company's reliability and flexibility, damages a business relationship more severely than a perceived short-term economic loss, such as the costs of finding and integrating a substitute product.

The fact that our model explains more than half of the variance of both overall customer satisfaction ($r^2 = .55$) and loyalty after the elimination ($r^2 = .53$) additionally highlights the criticality of the topic under study: it shows that customers' attitude and behavior towards a supplier are considerably affected by the elimination of a product and the resulting psychological and economic costs.

Besides revealing the crucial role of psychological and economic costs, our study also shows that these costs are not exogenous in nature, but influenced considerably by the eliminating firm's implementation efforts. Specifically, on the basis of a literature review and field interviews, we identify and structure a variety of important criteria customers use to evaluate the quality of such implementation efforts. Both constructs resulting from this procedure are found to significantly drive a customer's costs of the elimination and thus overall satisfaction and loyalty after the elimination, providing empirical evidence for the content validity of these "quality" constructs.

Interestingly, we find that a customer's economic costs tend to be equally driven by the perceived quality of the implementation process and outcome, whereas a customer's psychological costs are more heavily affected by the perceived quality of the implementation process. Moreover, our findings indicate that the perceived quality of an eliminating firm's

implementation process more strongly reduces a customer's psychological costs, whereas the perceived quality of the firm's implementation outcome more heavily decreases a customer's economic costs.

To analyze the relative impact of the two facets of an eliminating firm's implementation efforts (i.e., process and outcome), we computed the total effect of each facet on customer loyalty. On the basis of the parameter estimates shown in Figure 2, the implementation process has a total effect of .17, whereas the implementation outcome shows a total effect of .10. Thus, the implementation process turns out to be more important in the sense that it has a stronger overall impact on customer loyalty. This finding is particularly interesting since most research in related areas, such as complaint management (e.g., Smith, Bolton, and Wagner 1999) or services marketing (e.g., Bell, Auh, and Smalley 2005), finds a greater impact of the outcome-related dimension of company behavior.

Moreover, our study shows that the impact of an eliminating firm's implementation efforts varies significantly across products. In other words, we find the degree to which customer - and in turn relationship consequences - of the elimination are driven by the eliminating firm's implementation efforts to depend considerably on the eliminated product's characteristics of importance to the customer, specific investments of the customer, and interrelatedness with other products purchased from the firm (see Table 5). Specifically, the impact of the implementation outcome (four significant interaction terms) varies more strongly across products than the impact of the implementation process (two significant interaction terms). Interestingly, especially the degree to which a customer's economic costs are driven by the implementation outcome seems to depend on the characteristics of the eliminated product. This finding is intuitive, as both the dependent and independent variable of this relationship are closely related to the eliminated product, both absolute and compared to psychological costs and the implementation process, respectively (see also Footnote 5).

A more detailed look at the results shows that the product's importance to the customer does not affect the impact of the implementation process, but rather exclusively affects the impact of the implementation outcome. By contrast, product-specific investments of the customer and product interrelatedness moderate the effects of both the implementation process and the implementation outcome. Product interrelatedness solely influences the effects of these constructs on a customer's economic costs of the elimination. This finding can be explained

by the fact that the interrelatedness of the eliminated product has especially to do with product synergies, as well as any financial and time-related benefits associated with the customer's combined purchasing and combined use of this product with other products of the eliminating firm. Therefore, the degree to which these synergies and benefits are at stake seems to affect the impact of implementation efforts on a customer's economic burden and expenditures due to the elimination, but not the impact of such efforts on a customer's psychological consequences of the elimination.

Product-specific investments of the customer, however, present a more complex picture. On the one hand, this product characteristic enhances the impact of the implementation process on a customer's psychological costs of the elimination, but not on the economic costs. This finding may be due to the fact that in the case of considerable product-specific investments, an adequate manner in which a firm implements the elimination cannot prevent these investments to be mostly sunk. However, it can serve as a valuable indicator for the firm's general goodwill towards the customer, thereby preventing the customer to become seriously uncertain about the wisdom of engaging in a business relationship with the firm. On the other hand, product-specific investments increase the impact of the implementation outcome on the customer's economic costs of the elimination, but not on the psychological costs. This finding can be explained by the fact that when a customer has made significant irreversible investments in an eliminated product, receiving an appropriate compensation, such as the offer of alternative products or reimbursement for sunk investments, can make up for considerable economic losses. However, it seems not to dissuade the customer from raising significant doubts about the firm's reliability, flexibility, and cooperativeness.

7.2 Limitations and Avenues for Future Research

Our study has some limitations that, at the same time, offer promising avenues for future research. First, we focus on the adverse consequences of a product elimination. However, research and practice would certainly benefit from examining whether the elimination of a product may also have some favorable consequences for the customer, such as a reduced complexity of purchasing and logistics activities. Second, by drawing on social exchange theory, our study concentrates on satisfaction and loyalty as ultimate customer responses to product eliminations. To gain insight into other customer responses to product eliminations, such as customer complaints (e.g., Homburg and Fürst 2005, 2007), future studies could

develop and test a framework that draws on exit-voice theory (Hirschman 1970). Third, when analyzing moderating effects, we focus on characteristics of the eliminated product. Future studies could also examine corresponding effects of other variables. For example, relationship and market characteristics may moderate the links between customer consequences and relationship consequences of the elimination. Fourth, owing to our use of perceptual managerial responses, such as a customer's perceived quality of company elimination behavior or of the economic costs of the elimination, the relationships observed must be interpreted with due caution. Future research should try to draw on factual responses, such as the company's actual elimination behavior or the customer's actual economic costs of the elimination. Fifth, when assessing the economic costs of the elimination, respondents may have had some combination of "gross" costs (i.e., costs prior to any efforts by the eliminating company) and "net" costs (i.e., costs after the efforts by the eliminating company) in mind, although our study aims to solely focus on "net" costs. Finally, it is worth mentioning that our study draws on a B2B sample so that our findings only apply to this context. Future studies could examine which of the findings also hold true for a B2C context.

7.3 Managerial Implications

On a general level, our study shows that managers' decision to eliminate a product may result in adverse consequences not only for customers but also for the eliminating company itself. More precisely, a company's withdrawal of a problematic product from the portfolio can act as a double-edged sword, as it may simultaneously lead to serious dissatisfaction and defection on the customer side. However, our results also indicate that an eliminating company definitely has the chance to mitigate such unfavorable effects, thereby offering encouragement to managers facing removal of problematic products. In this context, we show that by appropriately implementing an elimination, a company can demonstrate market orientation to its customers even when doing something that does not at all appear to be market-oriented (i.e., removing a product from the portfolio).

On a pragmatic level, our study provides guidelines on how a company can best handle the implementation of product eliminations at the customer interface. In proactively managing the elimination, companies should recognize that product removals inevitably raise customer doubts about the wisdom of engaging in a business relationship with the eliminating company. We find that customers' psychological costs in terms of uncertainty about the company's reliability,

flexibility, and cooperativeness have a significantly stronger impact on satisfaction and loyalty after the elimination than do economic costs, such as the cost of finding a substitute product and adapting the production process. Thus, we advise managers implementing eliminations to focus more heavily on maintaining (or restoring) customer confidence in their firm's general reliability, flexibility, and cooperativeness than on compensating customers for the specific economic loss due to the product elimination.

To achieve this goal, managers should take particular care to address the “soft” factors (the implementation process), rather than solely relying on the “hard” factors (the implementation outcome). Specifically, we recommend focusing managerial attention and resources on a timely announcement of the elimination to give customers enough time for a smooth substitution of the product. Further, a firm should instruct and train customer-contact staff to properly explain the reasons for an elimination, to appropriately react to customer requests, and to allow customers to participate in the decision on the compensation provided. Our finding that such process-related activities have a stronger impact on customer loyalty than outcome-related activities is especially encouraging for firms that cannot offer a suitable alternative product or large financial compensation to their customers.

Of course, focusing on the implementation process should not lead to neglect of the implementation outcome, which still has a significant influence on the relationship consequences of an elimination. In most cases, offering an adequate alternative product to customers that are affected by an elimination may be the best solution for both company and customers. If no adequate alternative product can be provided, managers should at least strive to alleviate the adverse consequences of the elimination for customers. Relief may be provided by stocking replacement parts for the eliminated product, offering a reasonable amount of financial compensation for customer investments due to the elimination, or helping customers to find an alternative supplier.

Beyond these considerations, managers must be aware that the effectiveness of their firm's implementation efforts varies significantly with the eliminated product's characteristics - the importance to the customer, specific investments of the customer, and interrelatedness with other products purchased from the firm. Thus, we recommend that managers handling a product elimination at the customer interface adapt their efforts to the specific characteristics of the eliminated product.

Specifically, when the eliminated product is highly relevant to customers, managers should particularly strive to provide an appropriate compensation, for example by offering an adequate alternative product or by helping to find an alternative supplier. Otherwise, the elimination may cause significant financial damage to customers owing to adverse consequences such as interruptions of the production process, and in turn seriously endanger company-customer relationships.

Furthermore, when the eliminated product is associated with significant specific investments of customers, we advise managers to especially focus on both customer treatment (i.e., implementation process) and customer compensation (i.e., implementation outcome). In such a situation, an adequate treatment of customers (in terms of timeliness, decision control, explanation, and effort) is shown to be particularly effective in reducing customer uncertainty about the company's reliability, flexibility, and cooperativeness. By contrast, an appropriate compensation of customers (in terms of non-financial and financial support) is then found to be especially important to mitigate customers' economic losses (caused by sunk customer investments in the eliminated product).

Also, when the eliminated product is highly interrelated with other products of the eliminating company, adequate treatment of customers through the implementation process and an appropriate compensation of customers in the implementation outcome become more important. This importance lies in the particularly strong reducing impact of these implementation facets on customers' economic costs of the elimination, whereas customers' psychological costs of the elimination are not reduced in a particular strong way. Consequently, when eliminating a product of high interrelatedness, managers should try to especially emphasize those characteristics of the implementation that help reduce customers' economic costs. For example, we recommend communicating to customers that the elimination has been early announced to give them enough time to find an adequate and reasonably priced substitute product. Moreover, an eliminating company may then explicitly explain to customers how the offered alternative product could provide financial and time savings due to the combined purchasing and combined use with other products of the company.

Footnotes

- ¹ Although this theory has originally been developed to analyze interpersonal exchange relationships, its scope has subsequently been generalized (and thus extended) to exchange relationships between interacting parties, be it individuals or groups/organizations (e.g., Cropanzano and Mitchell 2005; Moorman, Blakely, and Niehoff 1998). This is also, and especially, true for the marketing literature. For example, researchers have successfully applied the theory to study buyer-seller relationships in business markets (e.g., Dwyer, Schurr, and Oh 1987), distributor firm and manufacturer firm working relationships (e.g., Anderson and Narus 1984, 1990), and interfirm adaption in relationships between a supplier firm and a customer firm (e.g., Hallen, Johanson, and Seyed-Mohamed 1991).
- ² Two case studies should illustrate our study's understanding of a product elimination. First, a customer producing alternators was confronted with the elimination of a type of electronic device, as this product disproportionately raised the complexity of processes in various functional areas of the eliminating company. So far, the customer had repeatedly purchased this product in large amounts from the eliminating company (located in Mid-Europe) to use it as an essential component of products produced by sites in Mid-Europe. Although the customer had another supplier (located in North-America) for this product, this company had so far only supplied the customer's sites in North- and Mid-America, as transporting the electronic devices to the sites in Mid-Europe would have been associated with prohibitively high costs. Second, a metal processing firm was no longer supplied with a certain type of steel, as this product became unprofitable for the eliminating company. The product, which had been exclusively purchased from this supplier, had served as the main raw material for manufacturing high-quality rivets and studs sold to customers from the machine building industry.
- ³ We assessed *non-response bias* by two tests. First, when comparing the firms we initially addressed and the responding firms, we found no significant differences in size or industry. Second, following the approach of Mentzer, Flint, and Hult (2001), we contacted a random sample of 50 non-respondents by telephone and asked them to answer the questions that capture the key constructs of our model. A comparison of group means revealed no significant differences between non-respondents and respondents. Moreover, to test for a *possible informant bias*, we asked respondents whether another manager of their firm had significant knowledge about the product elimination in question. Of the 53 respondents who answered in the affirmative, 46 provided the name and contact information of this manager. We sent a shortened version of our questionnaire to these individuals and compared the responses of the primary and secondary informant of each firm. Results show that the responses of the secondary informant were similar to those of the primary informant, providing further confidence in using the primary responses.
- ⁴ To determine whether the eliminated products in our sample were also important to the eliminating companies, we identified these firms on the basis of information given by customer respondents. Subsequently, we contacted these firms to ask whether the eliminated product represented an important part of their portfolio (on a seven-point scale with "unimportant part of portfolio" and "very important part of portfolio" as anchors). 38 firms provided this information. The resulting mean value of 3.91 indicated that the eliminated products in our sample were mostly of rather medium importance to the eliminating companies.
- ⁵ Moreover, results indicate a number of statistically significant direct effects of product characteristics and other control variables on customer and relationship consequences of an elimination: We find that product importance increases a customer's psychological and economic costs, whereas product-specific investments seem to have a positive effect on overall customer satisfaction and loyalty after the elimination. Further, product interrelatedness is found to enhance customer loyalty after the elimination. In addition, the availability of alternatives shows a negative effect on a customer's economic costs as well as overall satisfaction and loyalty after the elimination. Finally, we found

overall customer satisfaction before the elimination to positively influence overall customer satisfaction and loyalty after the elimination.

- ⁶ The interesting finding that H_{9a-c} is more strongly supported by the data than are H_{6a-c} - H_{8a-c} can be explained by the fact that the constructs related to H_{9a-c} (implementation outcome and a customer's economic costs of the elimination) show a closer relationship to product-related issues and thus to the moderator variables (characteristics of the eliminated product) than do the constructs related to H_{6a-c} - H_{8a-c} . Specifically, compared to the implementation process (the manner of the implementation), the implementation outcome is more closely related to product-related issues, as it includes, for example, the offer of alternative products and the stocking of replacement parts for the eliminated product. Similarly, compared to a customer's psychological costs (doubts about the eliminating company), a customer's economic costs are more closely related to product-related issues, as they include, for example, costs for searching and evaluating substitute products and opportunity costs owing to lost synergies with other products.

Appendix

Scale Items for Construct Measures

Constructs	Items ^a
(1) Perceived Quality of the Implementation Process	<p><i>To what extent do you agree with the following statements?</i></p> <p>The eliminating company ...</p> <p>... gave us timely notification of the elimination.</p> <p>... explained us the reasons for the elimination.</p> <p>... involved us in the decision on the exact date of the elimination.</p> <p>... involved us in the decision on the implementation of the elimination.</p> <p>... put a lot of effort in trying to mitigate our hassle due to the elimination.</p> <p>... overall has implemented the elimination in an appropriate manner.</p> <p><i>Selected sources: Avlonitis 1983; Tax, Brown, and Chandrashekar 1998</i></p>
(2) Perceived Quality of the Implementation Outcome	<p><i>To what extent do you agree with the following statements?</i></p> <p>The eliminating company ...</p> <p>... offered adequate alternative products for the eliminated product.</p> <p>... offered the stocking of replacement parts for the eliminated product.</p> <p>... helped us to find an adequate alternative supplier for the eliminated product.</p> <p>... provided adequate financial compensation for our investments needed due to the elimination.</p> <p>... overall has provided an adequate compensation when implementing the elimination.</p> <p><i>Selected sources: Argouslidis and Baltas 2007; Avlonitis 1984; Tax, Brown, and Chandrashekar 1998</i></p>
(3) Psychological Costs of the Elimination	<p><i>To what extent do you agree with the following statements?</i></p> <p>Due to the product elimination, we became uncertain about ...</p> <p>... whether we can still rely on the eliminating company.</p> <p>... whether the eliminating company is still flexible enough to meet our demands.</p> <p>... whether the eliminating company is still a cooperative business partner.</p> <p><i>Selected sources: Arend 2006; Dwyer, Schurr, and Oh 1987; Noordewier, John, and Nevin 1990</i></p>
(4) Economic Costs of the Elimination	<p><i>To what extent do you agree with the following statements?</i></p> <p>With respect to our elimination-induced activities (e.g., searching and evaluating substitute products, in-house development of a substitute product, additional quality assurance as well as additional set-up and downtime), the product elimination ...</p> <p>... was an enormous financial burden for us.</p> <p>... involved high expenditures for us.</p> <p>... was an enormous time-related burden for us.</p> <p>... was a very time-consuming incident for us.</p> <p><i>Selected sources: Cannon and Homburg 2001; Montgomery, Moore, and Urbany 2005</i></p>
(5) Overall Customer Satisfaction after the Elimination	<p><i>To what extent do you agree with the following statements?</i></p> <p>Overall, the eliminating company's performance in the business relationship exceeds our expectations.</p> <p>Overall, we are very satisfied with the eliminating company.</p> <p>Overall, so far, we have had good experiences with the eliminating company.</p> <p><i>Selected sources: Anderson and Sullivan 1993; Smith and Bolton 1998</i></p>

Appendix (Continued)

Scale Items for Construct Measures

Constructs	Items ^a
(6) Customer Loyalty after the Elimination	<p><i>To what extent do you agree with the following statements?</i></p> <p>After the implementation of the product elimination, we have remained loyal.</p> <p>After the implementation of the product elimination, we have continued the business relationship as before.</p> <p>We intend to remain loyal in the future.</p> <p>We intend to continue the business relationship in the future.</p> <p>We intend to extent the business relationship in the future (by purchasing additional products that we do not yet purchase from this company).</p> <p><i>Selected source: Mittal and Kamakura 2001</i></p>
(7) Importance of Product to the Customer	<p><i>To what extent do you agree with the following statements?</i></p> <p>Compared to other products used in our production process, the eliminated product is of high importance.</p> <p>A malfunction or non-availability of the eliminated product would have severe consequences for our production process.</p> <p><i>Selected source: Möller and Laaksonen 1986</i></p>
(8) Product-specific Investments of the Customer	<p><i>To what extent do you agree with the following statements?</i></p> <p>To effectively purchase and use the eliminated product, we have made substantial investments in specialized physical assets, processes, and people.</p> <p>To ensure a smooth purchasing and use of the eliminated product, we have significantly invested in resources that are specific to the eliminated product.</p> <p>We have made large specific investments to optimize the purchase and use of the eliminated product.</p> <p>For obtaining and processing the eliminated product, we have developed procedures and routines that are tailored to the technical specifications of the product.</p> <p><i>Selected sources: Heide and John 1990; Poppo 2003</i></p>
(9) Product Interrelatedness	<p><i>To what extent do you agree with the following statements?</i></p> <p>The eliminated product was purchased together with other products of the eliminating company.</p> <p>The joint purchasing of the eliminated product and other products of the eliminating company led to financial and time savings for our company.</p> <p>The eliminated product and other products of the eliminating company were used together in our production process.</p> <p>The joint use of the eliminated product and other products of the eliminating company led to product synergies for our company.</p> <p><i>Selected source: Cannon and Homburg 2001</i></p>
(10) Availability of Alternatives	<p><i>To what extent do you agree with the following statements?</i></p> <p>There are other suppliers in the market that could provide an adequate alternative to the eliminated product.</p> <p>There are a number of alternative supply sources for the eliminated product.</p> <p>Other suppliers have the same capabilities as the eliminating company.</p> <p>The supply market of the eliminated product is very competitive.</p> <p><i>Selected source: Cannon and Homburg 2001</i></p>
(11) Overall Customer Satisfaction before the Elimination	<p><i>To what extent do you agree with the following statements?</i></p> <p>Overall, the eliminating company's performance in the business relationship had exceeded our expectations.</p> <p>Overall, we had been very satisfied with the eliminating company.</p> <p>Overall, until then, we had had good experiences with the eliminating company.</p> <p><i>Selected sources: Anderson and Sullivan 1993; Smith and Bolton 1998</i></p>

Note:

^a All items are reflective in nature.

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