Factors Influencing the Likelihood of Customer Defection: The Role of Consumer Knowledge

Anthony J. Capraro
University of North Carolina at Asheville

Susan Broniarczyk
University of Texas at Austin

Rajendra K. Srivastava
University of Texas at Austin

Customer satisfaction is the predominant metric firms use for detecting and managing customers’ likelihood to defect. But while satisfaction and defection are related, satisfaction is only a weak predictor of whether a customer will defect. This article suggests that for repurchase decisions that involve an information-based evaluation of alternatives to the incumbent, likelihood of defection will be influenced by “how much” customers know about those alternatives. The relationship between level of knowledge about alternatives and defection is examined in the context of actual health insurance choices. Results suggest that the level of objective and subjective knowledge about alternatives has a direct effect on likelihood of defection—above and beyond satisfaction level. The view of defection forwarded in this article suggests that managers may be able to gain additional control over customer defection through actions aimed at influencing how much customers know (or come to know) about alternative vendors.

Keywords: customer defection; knowledge about alternatives; satisfaction; missing information; evaluation of alternatives

Today, most firms’ programs to control customer defection center heavily on the management of customer satisfaction. There is, of course, good support for this approach. A substantial body of research suggests that both repurchase intent (e.g., Anderson and Sullivan 1993; Coyne 1989; Cronin and Taylor 1992; LaBarbera and Mazursky 1983; Reichheld and Sasser 1990) and repurchase behavior (e.g., Bolton 1998; LaBarbera and Mazursky 1983; Newman and Werbel 1973; Sambandam and Lord 1995) are linked to customer satisfaction.

However, a closer review raises the question as to how well defection can be controlled by focusing solely on managing satisfaction. A number of academic studies found that satisfaction explains a relatively small proportion of the variance (less than 8%) in repurchasing behaviors (Bolton 1998; LaBarbera and Mazursky 1983; Newman and Werbel 1973). Reichheld (1996) cited research indicating that 65 to 85 percent of defecting customers do so despite being “satisfied” or “highly satisfied.” Thus, high satisfaction levels do not guarantee that customers will not defect. And dissatisfaction does not necessarily lead to defection—customers may continue to purchase from a vendor that has been a source of dissatisfaction (Hennig-Thurau and Klee 1997).

Some observe that the relationship between satisfaction and defection is nonlinear—that satisfaction has a stronger effect on defection when customers are “extremely satisfied” (Coyne 1989; Jones and Sasser 1995; Mittal and
However, reaching uniform “extreme satisfaction” across a diverse customer base can be costly (Fornell 1992)—at some point, efforts to reduce defection by improving satisfaction may yield diminishing (or negative) returns.

The above observations suggest value in broadening our understanding of the factors that can influence a customer’s likelihood to defect. To this end, Oliver (1999) explored the notion of a psychological state of loyalty. At the highest states of such loyalty, a customer will block out communications from the incumbent’s competitors, making him or her less likely to defect. Other authors have explored switching barriers as a deterrent of defection (e.g., Fornell 1992; Heide and Weiss 1995; Jones, Moathersbaugh, and Beatty 2000; Oliva, Oliver, and MacMillan 1992).

This article attempts to further our understanding of defection, focusing on repurchase decisions that involve an information-based evaluation of alternatives to the incumbent (alternatives). It examines a factor previously noted as a switching barrier (Klempner 1987), but whose relationship to likelihood of defection has not been systematically studied—customers’ level of knowledge about alternatives. Controlling for satisfaction level, it explores the relationship between likelihood of defection and the level of objective knowledge (Hypothesis 1) and subjective knowledge (Hypothesis 2). Level of objective knowledge about alternatives is defined as the number of instances of accurate information about alternatives (e.g., product features) stored in memory. Level of subjective knowledge (Brucks 1985; Park, Moathersbaugh, and Feick 1994) is defined in terms of how much individuals perceive they know about alternatives. The article also tests competing models of the interrelationship between knowledge and satisfaction (Hypothesis 3), examining whether they have independent effects on likelihood of defection (Figure 1A), whether the effect of knowledge is moderated by satisfaction level (Figure 1B), or whether knowledge mediates the effect of satisfaction level on likelihood of defection (Figure 1C).

**Objective Knowledge About Alternatives and Likelihood of Defection**

Dick and Basu (1994) conceptualized a customer’s decision to defect or not defect as depending on the relative evaluation of the incumbent versus alternatives. This perspective has been useful in explaining the linkage between satisfaction and defection—reduced satisfaction diminishes the evaluation of the incumbent, which in turn influences relative evaluation in favor of alternatives, making defection more likely (Oliver 1997).

Research suggests that the relative evaluation of incumbent and alternatives can also be influenced by what a customer knows about alternatives. For instance, information-processing theories of choice (e.g., Bettman 1979; Fishbein and Ajzen 1975) suggest that a consumer’s evaluation of an alternative will depend on the content of the consumer’s knowledge (i.e., information pertaining to how the alternative performs on decision-relevant attributes).

Another stream suggests that simply having less knowledge can influence evaluation. Consumers commonly make decisions with incomplete knowledge about alternatives (Kivetz and Simonson 2000). Most research has examined the situation where consumers are missing information about a single attribute. Under these conditions, consumers may infer a value for the missing attribute based on (1) the average value of the attribute across other competitors (Ross and Creyer 1992), (2) the overall evaluation of the product based on known common attributes (Kivetz and Simonson 2000), or (3) the value of a known attribute of the alternative that is perceived to be...
related to the missing attribute (Broniarczyk and Alba 1994).

A number of authors report that the inferred value is negatively discounted in evaluating the alternative (Jaccard and Wood 1988; Johnson and Levin 1985; Meyer 1981). Others find that consumers bypass inferring a value for missing information and simply assign a negative value to the missing information (Simmons and Lynch 1991). Presumably the likelihood of making inferences decreases as the amount of missing information increases, making the assignment of a negative value more likely as the amount of missing information increases. Furthermore, Johnson and Levin (1985) found that when inferences are made, the magnitude of negative discount increases with the amount of “missing” information. Thus, as the level of missing information about alternatives increases, one would expect a lowering of their evaluation and consequently a reduction in likelihood of defection.1

The amount of “missing” information about alternatives at time of choice will be substantially influenced by how much the customer knows (objective knowledge) about alternatives at initiation of prepurchase search. This prior knowledge, which reflects the history of the customer’s experience with, passive exposure to, and prior investigation of alternatives, is a base on which prepurchase search will build. The larger this base, the less there is to learn about alternatives (Brucks 1985; Moorthy, Ratchford, and Talukdar 1997; Punj and Staelin 1983). In addition, customers with more prior knowledge more tightly focus their search on gathering information that is decision relevant (Alba and Hutchinson 1987; Johnson and Russo 1984). Having less to learn about alternatives, and more strongly focused on gathering information relevant to evaluating alternatives, customers with more objective knowledge about alternatives at initiation of prepurchase search should be “missing” less decision-relevant information about alternatives at time of choice and therefore more likely to defect.

Hypothesis 1: Level of objective knowledge about alternatives at initiation of prepurchase search will be positively associated with likelihood of defection.

Subjective Knowledge About Alternatives and Likelihood of Defection

We have argued that level of objective knowledge about alternatives can affect likelihood of defection by influencing evaluation of alternatives. We now turn to level of subjective knowledge about alternatives, suggesting that this type of knowledge will affect defection by influencing the set of alternatives that consumers will perceive as viable candidates for purchase.

Marketing’s seminal studies in buying behavior (e.g., Engel, Kollat, and Blackwell 1973) have observed that a buyer will not initiate purchase behavior toward an alternative until some requisite level of information about that alternative has been gathered. Translated to a defection context, this suggests that a customer will need to have some requisite level of knowledge about an alternative at time of choice in order for him or her to consider that alternative a viable option to defect to. While a customer may have a positive evaluation of an alternative, a perception of insufficient knowledge about an alternative will preclude switching to it.

Factors that result in customers perceiving that there are more alternatives about which they have sufficient knowledge to defect should increase the likelihood of defection. Customers with higher levels of subjective knowledge about alternatives will perceive themselves as being more knowledgeable about alternatives (Brucks 1985) and thus should perceive that there are more alternatives for which they have sufficient knowledge to defect to.

Hypothesis 2: Level of subjective knowledge about alternatives to the incumbent at the time of choice will be positively associated with likelihood of defection.

The Relationship Between Satisfaction and Knowledge

The above hypotheses implicitly treat knowledge and satisfaction level as having independent effects on defection (Model 1, Figure 1A). However, conceivably, the relationship of these variables to each other and to likelihood of defection may be more complex.

Model 2: Satisfaction as Moderator Between Level of Knowledge and Likelihood of Defection

Another potential model is that satisfaction level might moderate the strength of the relationship between knowledge about alternatives and likelihood of defection (Figure 1B). Dick and Basu (1994) pointed out that a customer’s attitude toward the incumbent may influence how competitor information will be gathered (Alba and Hutchinson 1987), interpreted (Fazio 1990), or evaluated (Cacioppo and Petty 1985). One implication of this is that customers with a higher satisfaction level (an influence on attitude) might exhibit greater encoding and interpretation biases with regard to information about the incumbent’s competitors, resulting in the development of knowledge about alternatives that is more biased in favor of the incumbent. If so, the relationship between objective knowledge about alternatives and defection might be weaker among customers who are more satisfied—in other words, an interaction effect.

An interesting further question is how subjective knowledge and satisfaction might interact in determining likelihood of defection. Customers who are more dissatisfied with the incumbent might be willing to switch to another vendor without having to feel as knowledgeable...
about alternatives—in other words, dissatisfied customers might have a lower requisite level of knowledge needed to defect. Such a reduction in the requisite level of knowledge needed to defect would have little effect on likelihood of defection among customers with a high level of subjective knowledge. However, for customers with a low level of subjective knowledge, such a reduction should increase the likelihood to defect. This reasoning would lead one to posit that the relationship between subjective knowledge about alternatives and likelihood to defect will be weaker among more dissatisfied customers.

Alternatively, dissatisfaction might make customers more aware of the potential for negative consequences that could result from purchasing alternatives about which one perceives having too little knowledge. Such a reaction could make accuracy goals (Bettman, Luce, and Payne 1995) more salient and thus elevate the requisite level of knowledge that customers need in order to switch vendors. In contrast to the previous reasoning, this would suggest a moderating effect in which customers with low levels of subjective knowledge would be less likely to defect when they are less satisfied—in other words, the relationship between subjective knowledge and likelihood to defect would be stronger among the more dissatisfied. We investigate potential interactions between satisfaction and the level of both objective knowledge and subjective knowledge in Model 2 (see Figure 1B).

**Model 3: Level of Knowledge as a Mediator Between Satisfaction and Likelihood of Defection**

Recent studies have begun to consider mediators in the relationship between satisfactions and repurchase behavior (e.g., Nijssen, Singh, Sirdeshmukh, and Holzmüller 2003; Oliver 1999). Here we consider the level of objective knowledge at initiation of prepurchase search and level of subjective knowledge about alternatives at time of choice in such a mediating role.

Bloch, Sherrell, and Ridgeway (1986) observed that consumers conduct ongoing search between purchases, for instance, to build a store of knowledge for later use. Given that satisfaction level has been found to be negatively related to search effort (Newman and Staelin 1972), one would expect less satisfied customers to expend more effort in ongoing search. In turn, greater ongoing search should result in higher levels of objective knowledge about alternatives at initiation of prepurchase search. If such knowledge is a determinant of likelihood of defection, then some of the effect of satisfaction on likelihood of defection may be mediated by the level of objective knowledge about alternatives at initiation of prepurchase search.

Greater prepurchase search effort has been associated with higher levels of subjective knowledge (Park et al. 1994). Given the above-described relationship between satisfaction level and search effort, one would expect that less satisfied customers should exhibit higher levels of subjective knowledge about alternatives at time of choice. If the level of such knowledge is a predictor of likelihood of defection, then subjective knowledge at time of choice may mediate the relationship between satisfaction and likelihood to defect. Model 3 (Figure 1C) reflects these posited mediating roles of subjective and objective knowledge about alternatives.

We will test these three competing models of the relationship between satisfaction, objective knowledge at the initiation of prepurchase search on defection, and subjective knowledge at the time of choice on likelihood of defection. The relationship between knowledge and satisfaction on likelihood of defection is as follows:

**Hypothesis 3a:** Model 1: Knowledge and satisfaction have independent effects on likelihood of defection.

**Hypothesis 3b:** Model 2: Satisfaction moderates the effect of knowledge on likelihood of defection.

**Hypothesis 3c:** Model 3: Knowledge mediates the relationship between satisfaction and likelihood of defection.

**METHOD**

Hypotheses were tested in the context of a choice of health insurance plan at a large university. This context provided an appropriate test environment for several reasons. First, a choice of health plan is a decision for which consumers have been observed to seek out information about available alternatives (Gibbs, Sangl, and Burrus 1996). Thus, it appears to be a decision that involves an information-based evaluation of alternatives.

Second, the highly controlled health plan renewal process at this university offered an opportunity to study defection in a context where respondents could be surveyed at times close to their initiation of prepurchase search and to their making a final choice. At this university, employees select health insurance plans annually during a prescribed deliberation period that lasts for exactly 1 month. Information about the next year’s plans is unveiled only at the beginning of this deliberation period—prior to this, no official information is available. Given these conditions, the unveiling of information about the next year’s plan seemed to provide a relatively well-defined population-level marker of the initiation of prepurchase search and the closing of the deliberation period a well-defined marker as to time of choice.

Third, the context was one in which consumers’ knowledge about alternatives prior to initiating prepurchase search would represent a base on which knowledge about the coming year’s plan could be built. For instance, an understanding of the previous year’s HMO coverage guidelines and/or procedures would facilitate understanding for the next year. However, knowledge of past year’s plans would not be completely predictive for the following
year—benefits offered by a particular provider (e.g., deductible levels, situations covered, etc.) changed from year to year.

Data were collected in two stages. The first stage began about 1 month before the “unveiling” of the new health plans for the upcoming year. Surveys were mailed to a random sample of 1,000 university staff and faculty members, stratified to provide approximately equal numbers of subscribers to each of the four health insurance providers. This first stage survey measured respondents’ satisfaction with their current plan, their perceptions about the general risk associated with switching health plans, and their level of objective knowledge about alternative plans. A follow-up was mailed 1 week after the initial mailing. Only responses returned before the unveiling of the new health plan (385 responses) were used.

The second stage consisted of recontacting these 385 respondents immediately after the close of the health plan deliberation period (a follow-up was sent 1 week later). In this second stage, respondents were asked how much they felt they knew about the new plans that had been offered—an indicator of their subjective knowledge about alternatives at the time of choice. Again, a large majority of responses were received within 3 weeks of the initial mailing. Two hundred thirty-five responses were received, resulting in a total response rate of more than 23 percent.

MEASUREMENT

Measures were developed either by adapting scales from the existing literature (e.g., satisfaction) or in concert with university health plan administrators and existing theory. The items used to measure the following constructs are listed in Appendix B.

Satisfaction

Satisfaction with the current health insurance plan was measured using a four-item scale adapted from Oliver (1980). Each item used a 7-point scale, ranging from strongly agree to strongly disagree. A composite satisfaction score was developed by summing the responses to the four items.

Objective Knowledge About Alternatives

Consistent with Brucks (1985) and Park et al. (1994), level of objective knowledge about alternatives was measured as the number of correct responses to 13 questions asked about features in the various health plans offered for the current year. Responses were coded correct if the answer was right (e.g., answered “Y” when the correct answer was “Y”), Incorrect, “?” or blank responses were coded as not correct. Objective knowledge about alternative health plans was operationalized as the total number of correct answers for the three plans to which the respondent was not currently a subscriber. Raw scores were collapsed into high-knowledge and low-knowledge groupings (split at the median).

Subjective Knowledge About Alternatives

Subjective knowledge was measured by a single item that asked respondents to assess “how well do you understand the coverage provided” for each of the health plans (1 = well, 7 = not well). Level of subjective knowledge about alternatives was operationalized as the sum of subjective knowledge scores for the three plans to which the respondent was not a subscriber.

Switching Risk

Burnham (1998) reported that perceptions of risk associated with switching to a new vendor can act as a barrier to switching. To control for this effect, we included a single item to measure customers’ perceptions of the general riskiness of switching to a different health plan. The degree of this perceived risk was measured by agreement to a single item: “There is risk in changing health plans—you never know what you forgot to ask” (1 = strongly agree, 7 = strongly disagree).

The measures used for each construct were evaluated according to the procedure outlined by Gerbing and Anderson (1988). Results (see Appendix A) suggest that the measures were adequate in terms of unidimensionality, convergent or discriminant validity, and reliability. Response bias was analyzed from several perspectives (Armstrong and Overton 1977). Defection rates in returned responses (~4%) were similar to those in the subscriber population (~5%). Furthermore, the results suggest little early or late response bias. Response rates varied somewhat across health plans—the PPO plan (all others were HMO) had the lowest response rate (13%) and the lowest defection rate (~1%). Satisfaction levels across plans were indistinguishable.

RESULTS

There were 13 defections in the 222 responses used in the following analysis. Descriptive data for the variables in this study are displayed in Appendix C. The data suggest that most respondents were satisfied with their current health plan (median score of 20 out of a possible 28) and
that respondents view the action of switching to a new health plan as risky (median score of 6 out of 7). As expected, respondents had less than complete objective knowledge about current alternatives (median score of 4 out of a possible 39) but had greater objective knowledge about their own plan (median of 6.0 out of a possible score of 13). Consistent with Brucks (1985), subjective and objective knowledge were positively correlated ($r = .2$, $p = .004$). None of the other variables were significantly correlated with each other.

A hierarchical logistic regression procedure was used to test Hypotheses 1 and 2. The first step estimated a baseline model using satisfaction and switching risk as predictors of defection. A second step (the main effects model or Model 1) added level of objective knowledge at initiation of prepurchase search and level of subjective knowledge at time of choice to the baseline model.

As shown in Table 1, the baseline model\(^4\) adequately fits the data ($-2 \text{ log likelihood} = 92.8, p = .045$), explaining 8 percent of the variation in likelihood of defection (Nagelkerke 1991). Consistent with past research, the defection rate (see Table 2, part A) is higher among the unsatisfied (4 out of 49, or 8%) than the satisfied (9 out of 173, or 5%). Furthermore, as shown in Table 1, the coefficient for satisfaction ($b_{\text{satisfaction}} = -.09$) is negative and significant at the $p = .09$ level. The coefficient for perceived

### Table 1

<table>
<thead>
<tr>
<th>Relationship Between Level of Knowledge About Alternatives, Satisfaction, and Likelihood of Defection ($N = 222$)</th>
<th>$b$</th>
<th>$p$</th>
<th>Model Fit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Baseline model</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td>-.09</td>
<td>.09</td>
<td>$-2 \text{ LL} = 92.8, p = .045$</td>
</tr>
<tr>
<td>Switching risk</td>
<td>-.38</td>
<td>.03</td>
<td>$R^2 = .08$</td>
</tr>
<tr>
<td><strong>Model 1—main effects of knowledge</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td>-.10</td>
<td>.07</td>
<td>$-2 \text{ LL} = 78.0, p = .000$</td>
</tr>
<tr>
<td>Switching risk</td>
<td>-.41</td>
<td>.02</td>
<td>$R^2 = .25$</td>
</tr>
<tr>
<td>Objective knowledge(^a)</td>
<td>1.47</td>
<td>.04</td>
<td></td>
</tr>
<tr>
<td>Subjective knowledge(^b)</td>
<td>.20</td>
<td>.008</td>
<td></td>
</tr>
<tr>
<td><strong>Model 2—interaction between satisfaction and knowledge</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td>-.22</td>
<td>.47</td>
<td>$-2 \text{ LL} = 76.7, p = .000$</td>
</tr>
<tr>
<td>Switching risk</td>
<td>-.39</td>
<td>.04</td>
<td>$R^2 = .27$</td>
</tr>
<tr>
<td>Objective knowledge(^a)</td>
<td>3.45</td>
<td>.25</td>
<td></td>
</tr>
<tr>
<td>Subjective knowledge(^b)</td>
<td>.52</td>
<td>.17</td>
<td></td>
</tr>
<tr>
<td>Objective Knowledge(^a) × Satisfaction</td>
<td>-.10</td>
<td>.48</td>
<td></td>
</tr>
<tr>
<td>Subjective Knowledge(^b) × Satisfaction</td>
<td>-.02</td>
<td>.19</td>
<td></td>
</tr>
<tr>
<td><strong>Model 3—knowledge as mediator between satisfaction and likelihood of defection</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction → Likelihood of defection</td>
<td>-.09</td>
<td>.09</td>
<td></td>
</tr>
<tr>
<td>Satisfaction → Objective knowledge(^a)</td>
<td>-.002</td>
<td>.95</td>
<td></td>
</tr>
<tr>
<td>Satisfaction → Subjective knowledge(^b)</td>
<td>.11</td>
<td>.16(^c)</td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td>-.10</td>
<td>.07</td>
<td></td>
</tr>
<tr>
<td>Objective knowledge(^a) → Likelihood of defection</td>
<td>1.47</td>
<td>.04</td>
<td></td>
</tr>
<tr>
<td>Subjective knowledge(^b) → Likelihood of defection</td>
<td>.20</td>
<td>.008</td>
<td></td>
</tr>
</tbody>
</table>

NOTE: $\text{LL} = \log \text{ likelihood.}$
\(^a\) At initiation of prepurchase search.
\(^b\) At time of choice.
\(^c\) Two-tailed test.

### Table 2

**Distribution of Defections Across Satisfaction Level and Level of Knowledge**

<table>
<thead>
<tr>
<th>Satisfaction and Objective Knowledge</th>
<th>High Objective</th>
<th>Low Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge About Alternatives at Prepurchase Search</td>
<td>Knowledge About Alternatives at Prepurchase Search</td>
<td></td>
</tr>
<tr>
<td>Not satisfied/neutral</td>
<td>4/23 (17%)(^a)</td>
<td>0/26 (0%)(^a)</td>
</tr>
<tr>
<td>Satisfied</td>
<td>6/81 (7%)(^a)</td>
<td>3/92 (3%)(^a)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Satisfaction and Subjective Knowledge</th>
<th>High Subjective</th>
<th>Low Subjective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge About Alternatives at Time of Choice</td>
<td>Knowledge About Alternatives at Time of Choice</td>
<td></td>
</tr>
<tr>
<td>Not satisfied/neutral</td>
<td>4/29 (14%)(^a)</td>
<td>0/20 (0%)(^a)</td>
</tr>
<tr>
<td>Satisfied</td>
<td>9/99 (9%)(^a)</td>
<td>0/74 (0%)(^a)</td>
</tr>
</tbody>
</table>

\(^a\) Number of defections/number of respondents in cell (% defections).
switching risk are associated with lower likelihood of defection.

**Knowledge About Alternatives and Likelihood of Defection**

Model 1 tests (see Table 1) for main effects of satisfaction, perceived switching risk, objective knowledge, and subjective knowledge. As with the baseline model, satisfaction and perceived switching risk are negatively related to likelihood of defection ($b_{\text{switching risk}} = -0.41, p = 0.02$). Supporting Hypothesis 1, the coefficient for objective knowledge ($b_{\text{objective knowledge}} = 1.47, p = 0.04$) is positive and significant. Thus, after controlling for satisfaction and perceived switching risk, higher levels of objective knowledge at initiation of prepurchase search are associated with greater likelihood to defect.

The distribution of defections with regard to satisfaction level and level of objective knowledge about alternatives prior to prepurchase search is reported in Table 2, part A. The defection rate among those with a high level of objective knowledge about alternatives (10 out of 104, or 10%) is higher than among those with a low level (3 out of 118, or 3%). Among the unsatisfied, all defectors exhibited a high level of objective knowledge about alternatives.

Supporting Hypothesis 2 (Model 1, Table 1), the coefficient for subjective knowledge ($b_{\text{subjective knowledge}} = 0.20, p = 0.008$) is positive and significant, indicating that after controlling for satisfaction and perceived switching risk, higher levels of subjective knowledge at time of choice are associated with greater likelihood to defect. Table 2, part B reports the distribution of defections with regard to satisfaction level and subjective knowledge at the time of choice (above or below the median). Note that only those with a high level of subjective knowledge defected.

Furthermore, adding objective and subjective knowledge improves the model fit ($-2 \text{LL} = 78.0, p = 0.000$) relative to the baseline model ($\Delta \text{LL} = 14.8, 2 df, p < .000$) and raises the $R^2$ from .08 to .25. Thus, going beyond consumers’ satisfaction and perceived switching risk to consider consumers’ objective and subjective knowledge significantly enhances our ability to predict likelihood of defection.

**Relationship Between Knowledge and Satisfaction and Likelihood of Defection**

The support for Hypotheses 1 and 2 provides evidence for independent effects of knowledge and satisfaction on likelihood of defection, as suggested by Hypothesis 3a. Competing models of the relationship between knowledge and satisfaction on likelihood of defection were also tested. Model 2 tested Hypothesis 3b, adding satisfaction as a moderator in the relationship between objective knowledge at initiation of prepurchase search and likelihood of defection and as a moderator in the relationship between subjective knowledge at time of choice and likelihood of defection.

The results do not support Hypothesis 3b (see Model 2 in Table 1). Neither the interaction term between satisfaction and objective knowledge ($b_{\text{objective knowledge} \times \text{ satisfaction}} = -0.10, p = 0.48$) nor the interaction term between satisfaction and subjective knowledge ($b_{\text{subjective knowledge} \times \text{ satisfaction}} = -0.02, p = 0.19$) is significant. Furthermore, the fit of Model 2, while adequate ($-2 \text{ LL} = 76.7, p = 0.000$), is not significantly better than the main effects model ($\Delta \text{LL} = 1.3, 2 df, p = 0.43$). Based on moderated regression analysis criteria (Aiken and West 1991), we conclude that Model 2 (Hypothesis 3b) is not supported.

Model 3 in Table 1 reports on the test of Hypothesis 3c (consumer knowledge mediates the effect of satisfaction on likelihood of defection). Baron and Kenny’s (1986) procedure, adapted for two mediators (Shapiro and Spence 2002) was used. First, satisfaction was regressed against likelihood to defect. As shown, satisfaction is a predictor of likelihood of defection ($b_{\text{ satisfaction}} = -0.09$, significant at the $p = 0.06$ level. In the next stage of the test, satisfaction was regressed against objective knowledge at initiation of prepurchase search and subjective knowledge at time of choice in separate analyses. As can be seen from the middle section of the results pertaining to Model 3, satisfaction is not a significant predictor of either level of objective knowledge at initiation of prepurchase search ($b_{\text{objective knowledge}} = -0.02, p = 0.95$) or level of subjective knowledge at time of choice ($b_{\text{subjective knowledge}} = 0.11, p = 0.16$). This finding violates a necessary condition for mediation—that satisfaction must be a predictor of the posited mediating variables.

Finally, comparing the top and bottom sections depicted in Model 3, the coefficient for satisfaction is essentially the same whether both objective knowledge at initiation of prepurchase search and subjective knowledge at time of choice are included as predictors of likelihood of defection ($b_{\text{ satisfaction}} = -0.1, p = 0.07$) or whether they are omitted ($b_{\text{ satisfaction}} = -0.09, p = 0.09$). This again violates the conditions necessary for mediation. Thus, Model 3 (Hypothesis 3c) is not supported.

In summary, our competing model tests of the relationship between knowledge, satisfaction, and likelihood of defection support Model 1 (Hypothesis 3a)—objective and subjective knowledge appear to have independent direct effects on consumers’ likelihood of defecting, beyond effects associated with satisfaction level.

**DISCUSSION**

Recently, researchers have begun to consider factors beyond satisfaction that may influence whether a customer will defect. This article contributes to this stream, focusing...
on “how much customers know about alternatives” as a determinant of likelihood of defection. Specifically, it suggests that for repurchase decisions where customers consider alternatives and make information-based decisions, likelihood of defection will be influenced by the level of two kinds of knowledge—subjective knowledge and objective knowledge about alternatives. These two types of knowledge appear to have independent effects and together account for about twice as much variance in likelihood of defection as satisfaction and perceived switching risk.

The mediation hypotheses were not supported. While a satisfaction-knowledge-likelihood of defection link is theoretically plausible, little of the effect of satisfaction on likelihood of defection is mediated by knowledge about alternatives. Furthermore, no evidence was found for an interaction between satisfaction and level of knowledge about alternatives. Of course, additional power may have allowed us to detect the posited mediation and interaction effects. But from a practical perspective, our results suggest that both level of objective knowledge at initiation of prepurchase search and level of subjective knowledge at time of choice primarily operate on likelihood to defect as main effects.

Although we believe this study is the first to systematically investigate how a customer’s level of knowledge about alternatives influences likelihood of defection, previous studies have recognized that “level of knowledge about competitors” plays a role in defection. Klemperer’s (1987) and Fornell’s (1992) characterizations of a lack of knowledge about competitors as a switching barrier seem to recognize that level of knowledge about alternatives plays a role in defection. Similarly, Oliver’s (1999) assertion that highly loyal customers become less vulnerable, in part because they “tune out” competitive overtures, also seems consistent with our view that customers who know less about alternatives will be less likely to defect.

Consideration of level of knowledge about alternatives advances our understanding of defection. For instance, it helps to explain why dissatisfied customers sometimes do not defect. Although dissatisfaction may tend to shift relative evaluation in a way that disfavors the incumbent, if a customer does not know enough about alternatives at the time of choice to defect or discounts alternatives due to missing information, defection may not occur.

It also carries implications as to how managers might assess and manage their customers’ vulnerability to defection. For instance, consideration of level of knowledge about alternatives suggests that a customer’s vulnerability will depend not only on satisfaction level but also on how a customer has reached that level of satisfaction. Consider two customers about to initiate prepurchase search—one whose satisfaction level has fluctuated from high to low to high since the last purchase and a second whose satisfaction level has been consistently high. Looking only at satisfaction, these two customers would be equally likely to defect. However, the first customer’s drop in satisfaction is likely to have motivated him or her to investigate (search) alternatives during the period of dissatisfaction (Newman and Staelin 1972). That fluctuation will have left that customer with more knowledge about alternatives as prepurchase search begins—a position that our findings suggest will make the customer more vulnerable at the next time of choice. And even if the customer does not defect at that time, such knowledge about alternatives will render customers more capable of learning about alternatives for future purchase opportunities (Alba and Hutchinson 1987).

Previous authors have suggested that it may be possible to influence customers’ buying behavior by influencing the content of the information that customers attend to and perceive (e.g., Hoch and Deighton 1989; Kivetz and Simonson 2000). We broaden this thinking to suggest that even if it is not possible to influence the content of what customers know about alternatives, defection may be reduced if one can simply influence customers to know less about alternatives.

Interestingly, there may be potential to do so. Research suggests that the search effort that a consumer exerts depends on the trade-off between the projected costs and the benefits of search (Stigler 1961). To the extent that managers could induce customer perceptions that it will be difficult (and/or less rewarding) to gather information about alternatives, customers should reduce their investigation of alternatives, know less about alternatives, and ultimately be less likely to defect. While specific managerial actions that could influence customers’ investigation of alternatives are a matter for future research, it seems that actions such as designing one’s offering to make direct comparison with alternatives more difficult (increase the cost of search) or actions to ensnare oneself as the customer’s trusted and primary source of product class information (reduce the projected benefit of search) seem promising.

LIMITATIONS AND FUTURE RESEARCH

There are some limitations that should be noted in interpreting this study. For instance, while our view of the role of knowledge about alternatives in defection is intended to be generally relevant to repurchase decisions that involve an information-based evaluation of alternatives, such decisions are more likely to occur with purchases that consumers consider important. Knowledge about alternatives, for instance, would not be expected to play a role in contexts where consumers use low-effort decision strategies such as choice tactics (Hoyer 1984).

Furthermore, our results reflect only a single context. Certainly that context is substantial, with more than $250
billion paid in private health care insurance premiums in the United States in 1997 (National Committee for Quality Assurance 2001). Of course, not every health plan decision involves an evaluation of alternatives. However, a substantial proportion apparently does (Gibbs et al. 1996). Given the high customer acquisition costs in the health insurance industry ($200 to $400 per member), even if our findings could lead to only a small reduction in rate of defection, that reduction would have a substantial profit impact (Wood 1999).

Replication in other contexts is needed to assess the generalizability of our findings and conclusions. For instance, our findings reflect an all-or-none defection/nondefection decision. While such decisions are common (e.g., automobile purchases, choice of school), there are other kinds of decisions for which customers can switch vendors for only a portion of their purchases (e.g., opening an account with a new stock broker). If customers view such a decision as less consequential, knowledge about alternatives may play a smaller role in defection.

It would also be interesting to explore the role of knowledge about alternatives in defection for more purely experience or credence goods. By definition, there is more uncertainty about the performance of an experience or credence good than a search good. If customers are accustomed to more uncertainty in choosing the former kinds of goods, then a lack of subjective knowledge might have less impact on likelihood of defection in a pure credence or experience good than in health insurance—a hybrid of experience and search qualities.

Three measurement limitations should be noted. First, subjective knowledge and switching risk were measured by a single item. While our single items seem to tap into the central construct sampled by other studies’ multi-item scales (Campbell and Goodstein 2001; Park et al. 1994), multiple items would have been preferable. Second, it would be valuable to reproduce this study in a context where there is a higher rate of defection. Although our 200+ sample size is adequate for logistic regression techniques, the small number of observed defections limits our statistical power to detect effects. This lack of power, however, seems to suggest robustness in the relationships we find.

Finally, our design leaves open the possibility that satisfaction level might have changed between the measure of satisfaction and time of choice (~1.5 months) and that a satisfaction measure taken closer to time of choice would account for more of the variance in defection. However, given the historically low defection rates in health plans at this institution (~5%), it seems likely that satisfaction level would not have substantially changed in the 1 to 2 months between the measure of satisfaction and the choice of the next year’s health plan. Consequently, we believe that a later measure satisfaction of level would have had little effect on our results.

### APPENDIX A

**Measurement Model**

Unidimensionality: LISREL modification indexes suggested that one satisfaction indicator might also load on the subjective knowledge construct as well. However, the standardized loading of this indicator on subjective knowledge was eight times weaker than on satisfaction.

Reliability: Cronbach’s alpha for the satisfaction measure was .85—substantially above the recommended level of .7 (Nunnally 1978).

Reliability cannot be assessed for the single-item measures.

Discriminant validity: Examination of the Phi correlations indicated that all were significantly different from 1, with the largest correlation plus twice the standard error being .35.

Convergent validity: All satisfaction items had a significant loading on the satisfaction construct, with the lowest t-value in the Lambda matrix being 10.0—evidence of adequate convergent validity (Sujan, Weitz, and Kumar 1994) of the satisfaction items.

Overall fit: Error variances for satisfaction are calculated by LISREL. Estimates of error for the remaining constructs are set at 10 percent of the sample variance (Hayduk 1987). Although the goodness-of-fit test is significant ($\chi^2 = 20.0, 11 df, p = .045$), other indicators suggest adequate fit, with Goodness-of-Fit Index, Adjusted Goodness-of-Fit Index, Nonnormed Fit Index, Normed Fit Index, and Comparative Fit Index at .9 or above.
APPENDIX B
Items Used in Study

Satisfaction Items (α = .85)

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Strongly Disagree</th>
<th>7</th>
</tr>
</thead>
</table>
I am satisfied with my current health plan.
I am satisfied with the way my plan handles financial matters (e.g., billings, reimbursements).
I have been pleased with my health plan’s response when I have a question or complaint.
I am confident that my health plan will provide the care I need whenever I need it.

Objective-Knowledge Questions (predeliberation period)

Indicate whether each plan has the following features (circle “Y,” “N,” or “?”)
Annual Well Woman Exam
Prescription Coverage Through Caremark
Access to Emergency Room Treatment, but Must Notify Primary Care Physician Within 48 Hours
Access to Doctors Affiliated With Austin Regional Clinic (ARC)
24-Hour Access to Medical Personnel
Access to Doctors Affiliated With Austin Diagnostic Clinic (ADC)
Use of HMO Facilities or Choice of Any Doctor or Hospital
Obtain a 90-Day Supply of Prescription Medicine and Incur Only a Single Co-Pay
Ability to Use Austin Diagnostic Medical Center as a Hospital
Preexisting Condition Restrictions Waived During Enrollment Period
Use of Seton Medical Center as a Hospital
Counseling for Mental Health and Substance Abuse Problems
Use of St. David’s as a Hospital Facility

Subjective Knowledge About Alternatives (postpurchase)

<table>
<thead>
<tr>
<th>Well</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Not Well</th>
<th>7</th>
</tr>
</thead>
</table>
Please rate how well you understand the coverage provided by each of the following health plans.

Switching Risk

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Strongly Disagree</th>
<th>7</th>
</tr>
</thead>
</table>
There is risk in changing health plans—you never know what you forgot to ask.

APPENDIX C
Descriptive Statistics (N = 222)

<table>
<thead>
<tr>
<th></th>
<th>Low Response</th>
<th>High Response/Maximum Possible</th>
<th>Median Response</th>
<th>Mean Response</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction level</td>
<td>4</td>
<td>28/28</td>
<td>20</td>
<td>19.6</td>
<td>5.0</td>
</tr>
<tr>
<td>Switching risk</td>
<td>1</td>
<td>7/7</td>
<td>6</td>
<td>5.8</td>
<td>1.4</td>
</tr>
<tr>
<td>Objective knowledge of alternatives</td>
<td>0</td>
<td>28/39</td>
<td>4</td>
<td>5.7</td>
<td>6.0</td>
</tr>
<tr>
<td>Subjective knowledge of alternatives</td>
<td>3</td>
<td>21/21</td>
<td>12</td>
<td>12.0</td>
<td>5.8</td>
</tr>
<tr>
<td>Objective knowledge of own plan</td>
<td>0</td>
<td>11/13</td>
<td>6</td>
<td>5.8</td>
<td>2.6</td>
</tr>
<tr>
<td>Subjective knowledge of own plan</td>
<td>1</td>
<td>7/7</td>
<td>6</td>
<td>5.8</td>
<td>1.4</td>
</tr>
</tbody>
</table>
NOTES

1. The effect of missing information on likelihood of defection may not be the same for all customers. In a situation where preferences are heterogeneous and offerings are differentiated, we expect customers to fall into two groups.

For some, a reduction in missing information about alternatives will lead to improved evaluation of at least some alternatives. While customers missing substantial amounts of information about alternatives will be unlikely to defect (due to discounting), those missing less will be more likely to defect. Overall, the level of missing information at time of choice will be negatively related to likelihood of defection.

For others, a reduction in missing information about alternatives may not lead to improved evaluations of alternatives. This could occur among customers whose evaluation of what is learned about alternatives as the level of missing information declines is negative enough to balance or outweigh any positive effect of reduced discounting. Again, customers missing a lot of information about alternatives will be unlikely to defect; however, here, neither will those with higher levels. Thus, we expect no relationship between level of missing information at time of choice and likelihood to defect.

An absence of relationship for one group of customers and a negative relationship for the other group will, in the aggregate, manifest as an overall negative relationship. Thus, in aggregate, we expect amount of missing information about alternatives at time of choice to be negatively related to likelihood of defection.

2. Features were chosen as test items based on two considerations. First, according to university health plan administrators, each feature represented an important consideration in subscribers’ evaluations of health plans. Second, the features chosen were differentially represented in the various health plans—plans differed on 9 out of the 13 attributes used in this measure. No two plans were the same on all features. A tabulation of how plans compared on the features used to test objective knowledge is available from the first author of this article. The set of available health care providers remained stable during the course of this study.

3. For clarity’s sake, the results presented below reflect a recoding such that higher levels of satisfaction, switching risk, and subjective knowledge are reflected by higher ratings.

4. One of our reviewers suggested that, given the nonlinearities that have been observed between satisfaction and defection, we might try to use a quadratic term in the regression models. Adding this term to the models does improve the variance explained by about 7 percent (significant at the .01 level). However, the addition of the satisfaction-squared term drove the coefficient for the linear satisfaction term to insignificance—perhaps due to multicollinearity. Since adding the quadratic term had no impact on the coefficients for either objective knowledge or perceived risk of switching, we present models with only the linear term.

5. All regressions included perceived switching risk as a control variable. The coefficients for perceived switching risk are not included since they are not relevant to the test for mediation.

REFERENCES


