Tell Us Again, How Satisfied Are You? The Influence of Recurring Posttransaction Surveys on Purchase Behavior

Andrea Godfrey Flynn¹, Linda Court Salisbury², and Kathleen Seiders²

Abstract
Service firms frequently contact customers after a transaction to solicit feedback and assess satisfaction with the service experience. Customers who have an ongoing relationship with a firm may receive satisfaction surveys after many or even most of their service encounters, yielding effects that are likely to be cumulative over time. Yet how these cumulative effects influence customer purchase behavior is not clear. Because satisfaction surveys serve a dual purpose of providing valuable customer feedback and incorporating bidirectional communication into relational marketing strategies, understanding their longer term effects is important. This study examines the influence of recurring posttransaction satisfaction surveys on purchase behavior at the individual customer transaction level using service transaction data and relational contact data spanning 3 years at a large North American automotive dealership. The findings reveal that repeatedly soliciting a customer’s feedback may have detrimental cumulative effects on purchase amount and interpurchase time, and the cumulative effects vary with customers’ cross purchasing history. Results indicate diminished impact of other individualized direct contacts when a customer also receives a posttransaction satisfaction survey. The authors discuss how companies can use satisfaction surveys as an effective tool within a firm’s portfolio of relational communications and minimize detrimental effects over time.

Keywords
satisfaction surveys, postservice satisfaction, service purchase behavior, relational communication, customer relationship management

A vast spectrum of services—hotels, airlines, medical clinics, auto dealerships, banks, telecom providers, and all varieties of retailers—frequently administer postservice encounter satisfaction surveys to customers. While these surveys can provide valuable information, firms may run the risk of unfavorable outcomes by asking customers for feedback too often. This research examines customer purchase behavior in response to receiving recurring satisfaction surveys soliciting feedback directly following service transactions. Satisfaction survey requests not only provide valuable feedback about the service experience, they also enable firms to incorporate bidirectional communication into their relational marketing strategies. As such, survey requests serve a dual purpose of satisfaction assessment and relational touch point.

Customers who have an ongoing relationship with a service firm may receive satisfaction surveys after many or even most of their service encounters, yielding effects that are likely to be cumulative over time. Yet how these cumulative effects influence customer purchase behavior is not clear. Does the relational nature of soliciting feedback on a recurring basis foster customer purchase behaviors enduringly beneficial to the firm, or do benefits diminish over time when the firm continues “asking for more?” This has important implications for balancing the need to continually improve the customer experience with the desire to effectively manage relational communication. To better understand the impact on purchase behavior, we address these research questions: How do recurring posttransaction satisfaction surveys from a firm affect a customer’s subsequent purchase behavior? To what extent do the effects of these recurring surveys depend on a customer’s purchase history with the firm? Do satisfaction surveys have a synergistic effect with other direct contacts from that firm?

A deeper understanding of how a service firm’s recurring survey requests impact its ongoing relationships with customers is needed because well-established empirical findings from a number of studies support predictions that are notably

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dissimilar. A stream of studies provides robust evidence that satisfaction measurement and solicitation of customer input can positively influence purchase behaviors (e.g., Dholakia and Morwitz 2002). However, studies from other research streams suggest that recurring participation in satisfaction surveys and feedback solicitations may have a detrimental impact on key outcomes (e.g., Adams and Umbach 2012). We explore these divergent perspectives to gain insight into the mechanism whereby positive effects of a satisfaction survey request on customer purchase behavior may deteriorate over time. We examine these effects using a research approach that allows us to gain fine-grained insight into the cumulative impact on customers’ purchase behavior from transaction to transaction and disentangle the incremental impact of each additional survey the customer receives. Associated with this, we consider individual-level customer differences by evaluating the extent to which customers’ prior purchase intensity with the firm moderates the cumulative effects of satisfaction surveys on subsequent purchase behavior.

In addition, we examine the combined effects of satisfaction surveys and other relational communication. Because a firm’s relational communication portfolio often integrates satisfaction survey requests with other forms of direct contacts, understanding the combined effects is necessary to effectively target and implement communication initiatives. Despite the relevance of this issue, we know of no studies that have examined the positive or negative synergy of a firm’s satisfaction surveys and its other direct contacts. As such, it remains to be seen whether soliciting feedback from customers on a recurring basis while also utilizing other forms of direct contacts is effective or not.

**Conceptual Development and Research Hypotheses**

In a company’s relational communications strategy, satisfaction surveys may be used not only to solicit transaction-specific customer feedback (e.g., Keiningham et al. 2014), with the goal of enhancing service quality but also to strengthen customer relationships. Because of this multidimensional role, the potential exists for surveys to have complex effects that are difficult for researchers and managers to reconcile. We examine the effects of posttransaction satisfaction surveys in a setting where customers have a continuing, recurring relationship with the service provider, transacting with and receiving communications from the firm on an ongoing basis. Our objective is to consider how satisfaction surveys, in this context of varied service experiences and targeted communications, impact the firm-customer relationship in terms of customer purchase behavior.

**Effects of Recurring Satisfaction Surveys on Customer Purchase Behavior**

Empirical studies have found that a satisfaction survey positively influences customer purchase behaviors including service expenditures, number of accounts owned, number of services purchased, profitability, purchase frequency, and responsiveness to promotional programs (Borle et al. 2007; Dholakia and Morwitz 2002; Dholakia, Morwitz, and Westbrook 2004; Dholakia, Singh, and Westbrook 2010). Investigating the mechanism of feedback solicitation, Bone et al. (2016) found that the positive effects of a survey were enhanced when customers were initially prompted to report favorable aspects of their service encounter. Limited research, however, has examined how receiving *recurring* survey requests over time from a firm affects a customer’s pattern of purchase behavior. A notable exception, Allen, Dholakia, and Basuroy (2016), found that web panel members who voluntarily participated in more online surveys than other panel members had a greater number of purchases and higher levels of cross purchasing, though not significantly higher levels of spending.

Researchers have explained these findings theoretically using the positivity effect—well established in mere measurement theory—which posits that measuring satisfaction motivates customers to form favorable inferences about the firm (Dholakia, Morwitz, and Westbrook 2004). When customers consider a company’s motives for soliciting feedback, they may infer that the firm is relationship oriented, values their opinions, and uses information to enhance service satisfaction (Dholakia 2010). Participation in surveys may foster positive feelings of helping the service firm by providing feedback and, recognizing that the firm is investing resources to collect input, customers may reciprocate with actions beneficial to the firm (Allen, Dholakia, and Basuroy 2016; Liu and Gal 2011).

Despite robust evidence of the positive impacts of satisfaction surveys on subsequent behavior, other research suggests that receiving repeated feedback solicitation and surveys over time may have a more complex link to purchase behavior. Studies of panel research methodology note that frequent survey participation can impact response bias, decreasing the reliability and validity of the research results (e.g., Bastian, Eggett, and Jefferies 2014). For example, frequent participation can produce learning effects that lead to undesirably fast response times and erode the quality of the responses (e.g., Vocino and Polonsky 2014). Research in higher education settings on fatigue from multiple survey requests has found that frequent survey requests are associated with lower response rates (e.g., Adams and Umbach 2012; Porter, Whitcomb, and Weitzer 2004).

Frequent survey requests may cause participants to feel that they have “done enough,” creating ambivalence and resistance (Laurie, Smith, and Scott 1999; Olson 2014). Feedback solicitation without explicit benefit to the customer may engender skepticism that the firm is not interested in actually utilizing the feedback. The phenomenon of increasingly negative outcomes is consistent with equity theory, which suggests that customers likely would come to resist contributing feedback without some type of reward for their continued participation. Equity, a distributive
justice principle signifying participants’ rewards equal their contributions to the exchange (Adams 1963; Folger 1986), is viewed as a fundamental component of customer-firm relationships (Oliver and Swan 1989; Seiders and Berry 1998). Numerous studies in the services domain have found justice (or fairness) to be a critical and dynamic determinant of customer outcomes (Bower and Maxham 2012; Olsen and Johnson 2003; Xia and Kukar-Kinney 2013). We propose that perceptions of equity will deteriorate over time as the customer expends more effort to contribute feedback and perceives less benefit is received from the firm in return. As customers’ equity perceptions shift during this period, the positive effects of a survey will diminish as the cumulative frequency of survey requests increases, and purchase behavior will be decreasingly favorable.

We examine purchase behavior at the individual customer transaction level based on, first, whether or not the customer received a satisfaction survey following the prior transaction, and second, the cumulative ratio of surveys to transactions the customer received up to that point in time. This approach assesses how a survey influences purchase behavior at the next consecutive visit, estimating effects at the individual customer transaction level across multiple years. We examine two types of purchase behavior—purchase amount and interpurchase time—and test how recurring feedback solicitation influences customer purchase behavior over time. Investigating both aspects of purchase behavior is valuable because, while studies of the impact of a satisfaction survey on subsequent customer spending consistently find beneficial effects, findings related to the impact on timing of subsequent visits are somewhat equivocal. If a customer has previously received surveys after relatively more (vs. fewer) transactions (i.e., as survey frequency increases), we expect the beneficial effect of a survey on subsequent purchase amount and interpurchase time to decrease. In effect, this suggests that it becomes increasingly difficult to improve customer purchase behavior at high levels of cumulative survey frequency.

In summary, consistent with mere measurement and positivity effect research, we formally hypothesize that a satisfaction survey from a firm beneficially influences a customer’s purchase behavior. Following other empirical studies and adopting an equity theory perspective of customer-firm relationships, we also hypothesize that positive effects diminish with the cumulative increase in survey frequency.

**Hypothesis 1:** A posttransaction satisfaction survey has a beneficial effect on (a) purchase amount at, and (b) interpurchase time until, the next transaction.

**Hypothesis 2:** Higher survey frequency diminishes the beneficial effect of a posttransaction satisfaction survey on (a) purchase amount at, and (b) interpurchase time until, the next transaction.

Taking individual customer behavior into account, we further investigate whether prior purchase intensity affects the degree to which recurring satisfaction surveys have a detrimental impact on purchase behavior. We examine customers’ prior purchase intensity related to the number of different types of services purchased from a firm and refer to this as cross purchasing. Other purchase history–related constructs, such as length of relationship or total customer spending, have been positively associated with higher revenues, greater share of wallet, longer lifetime duration, and more profitable customer lifetime value (e.g., Kumar and Venkatesan 2005; Reimartz and Kumar 2003). It may seem probable that customers whose relationships with the firm are the most established will be least vulnerable to any adverse impact of recurring survey effects. While many firms are likely to be guided by this assumption, theory and evidence suggest that effects may be less predictable. In fact, studies have found weaker positive effects of a single satisfaction survey for customers with higher levels of experience and stronger effects for those with lower levels (Dholakia, Morwitz, and Westbrook 2004). Borle et al. (2007) found that among more experienced customers, those who participated in a survey subsequently had lower spending than customers who didn’t participate in the survey.

These findings also are consistent with an equity theory perspective, which predicts that customers with higher levels of cross purchasing may be more sensitive to the detrimental effects of recurring satisfaction surveys. Customers who often engage in cross purchasing are likely to view themselves as “good” customers and believe that, in exchange for repeatedly providing feedback, they should receive commensurate benefits from the firm. Research indicates that length of customer–firm relationship affects fairness perceptions and that longer term customers are more demanding of fair treatment than less involved customers (Xia and Kukar-Kinney 2013). We draw on prior findings and this theoretical base to hypothesize:

**Hypothesis 3:** Higher survey frequency diminishes the beneficial effect of a posttransaction satisfaction survey on (a) purchase amount at, and (b) interpurchase time until, the next transaction more strongly for customers who engage in greater cross purchasing with the firm.

**Interactions Between Satisfaction Surveys and Other Direct Contacts**

In managing relational communications, firms use satisfaction surveys along with other forms of individualized direct contacts. To understand the extent to which synergy exists, we examine whether customer purchase behavior in response to other direct contacts from the firm is influenced by satisfaction surveys. Individualized direct contacts typically include tailored messages designed to offer social or relational benefit. For example, firms use direct contacts to inform customers of promotional events, offer tangible economic rewards, remind them of needed services, and announce new products and locations. Although practice norms suggest that marketers expect synergies when
using multiple forms of communication, little empirical evidence indicates whether synergies are actually achieved.

Empirical studies indicate that direct contacts positively affect customer retention, profitability, share of wallet, and cross buying behavior (Danaher and Dagger 2013; Reinartz, Thomas, and Kumar 2005). Researchers suggest that customers respond favorably to increasing amounts of individualized communication because the firm is investing more resources in the relationship, triggering reciprocal behavior and producing positive outcomes (Bagozzi 1995; Godfrey, Seiders, and Voss 2011). Although research shows that different types of contacts can vary in terms of their effectiveness (De Wulf, Odekerken-Schroeder, and Iacobucci 2001; Rust and Verhoef 2005), we expect that, overall, individualized direct contacts from a firm will positively influence a customer’s purchase behavior.

Customer responses to direct contacts are influenced by the manner in which firms implement their communication strategies. Evidence suggests that customers may react negatively to pressure from firms using intensive marketing communications and that perceptions of opportunistic behavior can damage relationship quality (Prins and Verhoef 2007; Srivastava and Chakravarti 2009). If customers detect that the firm is using a message soliciting feedback simply as a promotional opportunity, satisfaction surveys might fail to produce positive synergies with other forms of contacts. More specifically, a distancing effect may be produced by inferences that surveys are a direct communication tool rather than a sincere request for feedback. As Mende, Bolton, and Bittner (2013) suggest, standardized approaches to administering relational communications can generate negative responses by causing some customers to view the contacts as too superficial and causing others to view them as too intrusive.

There is limited empirical research on whether the combined use of satisfaction surveys and other direct contacts produces positive, negative, or negligible synergies. Related studies report negative interactions between surveys and other types of communications from multiple competing firms (Dong, Janakiraman, and Xie 2014) and between direct product announcements and traditional advertising (Prins and Verhoef 2007). These findings may indicate that the multiplicative effects of surveys and other direct contacts will manifest in a negative synergistic effect on subsequent purchase behavior, rather than fully additive positive effects. In light of prior empirical findings and theoretical support, we expect that, when considered independently, both satisfaction surveys and other direct contacts from a firm will positively influence a customer’s purchase behavior. When considered collectively, however, interaction effects will be negative (i.e., the combined effects will be less than the sum of each type). We consider these effects on purchase amount but not on interpurchase time because, in some cases, a company may initiate direct contacts based on the time since the customer’s last purchase, suggesting that interpurchase time may influence receipt of a direct contact. We formally hypothesize:

**Hypothesis 4:** A posttransaction satisfaction survey diminishes the beneficial effect of direct contacts on purchase amount at the next transaction.

**Methodology**

We examine the influence of recurring posttransaction satisfaction surveys on purchase behavior using field data from the service department of a large North American dealership of a leading global automobile manufacturer. Our data comprise two data sources merged into a single data set: service transaction data and one-to-one relational contact data. The transaction data include all auto service transactions made by each customer over a 39-month period. The relational contact data include all relational communications delivered by postal mail, e-mail, and telephone during the same 39-month period. We merged the two data sources into a single data set containing 7,513 customers, with an average 7.10 repeat service transactions over the observation period, resulting in 53,358 total observations. Each service transaction has an associated prior transaction, so all customers in the analysis visited the dealership at least twice during the 39-month observation period, and each observation in our analysis represents a repurchase transaction.

Purchase transaction data include the types of services a customer purchased during each visit as well as the total dollars spent for each service. The relational contact data include records of the individualized direct contacts a customer received between transactions as well as the type of message content in each contact. Posttransaction satisfaction surveys are initiated after a service transaction to measure the degree of customer satisfaction with the service experience. Customers are first asked to indicate whether they were satisfied with their visit on a 1-5 scale, with 5 indicating that the customer was completely satisfied and 1 indicating not at all satisfied. Customers are next asked, using an open-ended format, to share any comments they have about the service they received. The firm does not offer customers any rewards or financial incentives for responding to a survey. All other direct contacts include attempts to offer some type of social or relational benefit, such as birthday greetings, or requests that the customer perform some type of action, such as scheduling a service appointment.

Our analysis examines the extent to which customer purchase behavior could be adversely affected by customers repeatedly receiving surveys after service transactions. We operationalize this key variable, survey frequency, by calculating for each customer the proportion of all prior transactions after which a satisfaction survey was received (ranging from 0% to 100%). Direct contact frequency is the proportion of all prior transactions before which another type of direct contact, such as birthday greetings or maintenance reminders, was received. Cross purchasing is operationalized as the number of different service types a customer has purchased across all prior service transactions (ranging from 1 to 6; motor vehicle
inspection, regular maintenance, major maintenance, repair work, body work, and “all other” types), representing the breadth of services cross purchased by the customer during his or her relationship with the firm.

We measure survey frequency and direct contact history using proportion of prior transactions, rather than simply counting each occurrence, because we also include purchase visit number in our empirical model (to account for temporal effects, as described subsequently), and purchase visit number is strongly correlated with the number of prior surveys (ρ = .81) and prior direct contacts (ρ = .76), while proportion measures are far less so (ρ = .27 and .14 for proportion with surveys and other direct contacts, respectively).

Table 1 summarizes variable definitions and summary statistics for our customer sample. Customer purchase amount averaged CAD$137.18 per visit, with an average interpurchase time of 80.19 days. Median purchase amount and interpurchase time were CAD$59.76 and 59 days, respectively. Customers received satisfaction surveys after 68% of prior transactions observed, and they received one or more other direct contacts prior to 53% of the repurchase transactions observed. Accumulating each individual customer’s cross purchasing over all prior transactions, average prior purchase intensity was 3.99 (out of 6) unique types of services purchased across all prior transactions. Regular maintenance and repair work were the two most frequently purchased service types (56% and 46%, respectively).

### Empirical Model

We test our hypotheses by estimating the purchase amount for each transaction and the time between purchases as a function of whether the customer received a satisfaction survey or other direct contact since the most recent transaction as well as the customer’s survey frequency and purchase history. We observe in our data that about two thirds of service transactions have an accompanying survey, while a third do not. This variation in satisfaction survey requests enables us to estimate the impact of a customer receiving versus not receiving a survey. Whether the company contacts a customer could be influenced in part by customer purchase amount or by time elapsed since the customer last purchased, our dependent variables. Consequently, we simultaneously estimate a joint model of purchase amount (AMOUNT), interpurchase time (TIME), the probability of receiving a satisfaction survey (Pr[SVY = 1]) after the prior transaction (t − 1), and the probability of receiving other direct contacts (Pr[DIR = 1]) after the prior transaction (t − 1) and before the current transaction (t); and we allow covariation across the four dependent variables.

Given a set of regressors, $X_A$ and $X_T$, purchase amount and interpurchase time are assumed to follow lognormal distributions, $\log AMOUNT_{it} \sim N(X_A x, \sigma^2_x)$ and $\log TIME_{it} \sim N(X_T \beta, \sigma^2_{\beta})$, respectively (Borle et al. 2007). The customer has latent utility associated with receiving a satisfaction survey (SVY) or receiving other direct contacts (DIR). Given a set of regressors, $X_S$ and $X_D$, we assume the probability the customer receives a survey is,
Pr(SVY_{it} = 1 | X_{it}) = \Phi(X_{yt}), and similarly for other direct contacts, Pr(DIR_{it} = 1 | X_{it}) = \Phi(X_{yt}), (Dholakia, Singh, and Westbrook 2010). The system of four equations is specified as follows:

\[
\log\text{AMOUNT}_{it} = \alpha_0 + \alpha_{SVY} SVY_{it} + \alpha_{SFREQ}SFREQ_{it} + \alpha_{CSFREQ}SFREQ^2_{it} + \alpha_{DIR} DIR_{it} + \alpha_{CP} CP_{it} + \alpha_{SVY \times SFREQ} SVY_{it} \times SFREQ_{it} + \alpha_{SVY \times DIR} SVY_{it} \times DIR_{it} + \alpha_{SVY \times CP} SVY_{it} \times CP_{it} + \alpha_{SFREQ \times CP} SFREQ_{it} \times CP_{it} + \alpha_{SVY \times SFREQ \times CP} SVY_{it} \times SFREQ_{it} \times CP_{it} + \alpha_{PV} PV_{it} + \alpha_{VIS} VIS_{it} + \alpha_{WAR} WAR_{it} + \alpha_{VA} VA_{it} + \sum_{m=1}^{6} \alpha_{ST,m} ST_{mi} + \alpha_{RAT} RAT_{it} + \eta_i + \epsilon_{it},
\]

\[
\log\text{TIME}_{it} = \beta_0 + \beta_{SVY} SVY_{it} + \beta_{SFREQ}SFREQ_{it} + \beta_{CSFREQ}SFREQ^2_{it} + \beta_{CP} CP_{it} + \beta_{SVY \times SFREQ} SVY_{it} \times SFREQ_{it} + \beta_{SVY \times CP} SVY_{it} \times CP_{it} + \beta_{SFREQ \times CP} SFREQ_{it} \times CP_{it} + \beta_{SVY \times SFREQ \times CP} SVY_{it} \times SFREQ_{it} \times CP_{it} + \beta_{PV} PV_{it} + \beta_{VIS} VIS_{it} + \beta_{WAR} WAR_{it} + \beta_{VA} VA_{it} + \sum_{m=1}^{6} \beta_{ST,m} ST_{mi} + \beta_{RAT} RAT_{it} + \theta_i + \xi_{it},
\]

\[
SVY_{it} = \gamma_0 + \gamma_{SFREQ}SFREQ_{it} + \gamma_{CSFREQ}SFREQ^2_{it} + \gamma_{CP} CP_{it} + \gamma_{PV} PV_{it} + \gamma_{VIS} VIS_{it} + \gamma_{WAR} WAR_{it} + \gamma_{VA} VA_{it} + \gamma_{ST,m} ST_{mi} + \gamma_{RAT} RAT_{it} + \phi_i + \psi_i;
\]

\[
DIR_{it} = \delta_0 + \delta_{SFREQ}SFREQ_{it} + \delta_{CSFREQ}SFREQ^2_{it} + \delta_{CP} CP_{it} + \delta_{PV} PV_{it} + \delta_{VIS} VIS_{it} + \delta_{WAR} WAR_{it} + \delta_{VA} VA_{it} + \delta_{ST,m} ST_{mi} + \delta_{RAT} RAT_{it} + \nu_i.
\]

A logarithmic transformation of total purchase amount for customer \(i\) during service transaction \(t\) (logAMOUNT\(_{it}\)) is estimated as a linear function of receiving a survey (SVY\(_{it}\)), survey frequency (SFREQ\(_{it}\)), other direct contacts (DIR\(_{it}\)), and cross purchasing history (CP\(_{it}\)). The indicator variables, SVY\(_{it}\) and DIR\(_{it}\), are equal to 1 if customer \(i\) received a survey (SVY\(_{it}\)) or other direct contact (DIR\(_{it}\)) after the prior transaction \((t - 1)\) and before the current transaction \((t)\) and equal 0 otherwise. We control for posttransaction satisfaction rating (RAT\(_{it}\)) and the type of service received (ST\(_{mit}\)), where \(m\) represents one of six service types (maintenance vehicle inspection, regular maintenance, major maintenance, repair work, body work, and “all other” types). We also include the purchase visit number, VIS\(_{it}\), to account for purchase trends over time.

We simultaneously estimate the logarithmic transformation of interpurchase time for customer \(i\) between transaction \(t - 1\) and transaction \(t\) (logTIME\(_{it}\)) as a linear function of posttransaction satisfaction survey (SVY\(_{it}\)), survey frequency (SFREQ\(_{it}\)), and prior cross purchasing (CP\(_{it}\)). We control for posttransaction satisfaction rating (RAT\(_{it}\)) and type of service received (ST\(_{mit}\); purchase visit number, VIS\(_{it}\), accounts for trends over time. We do not include other direct contacts (DIR\(_{it}\)) as a predictor of interpurchase time because these contact types may be initiated by the company in part as a result of the time elapsed since the customer last purchased (e.g., maintenance reminders). As such, we opted to treat interpurchase time as a predictor of receiving direct contacts (described subsequently), rather than vice versa, even though the direct contacts were made before the current transaction.

We estimate a binary probit model to predict the probability of receiving a survey after the prior transaction; latent utility associated with receiving a survey (SVY\(_{it}\)) is a linear function of the type of service received in the prior transaction (ST\(_{mit}, t - 1\)) as well as survey frequency from the company (SFREQ\(_{it}\)), prior cross purchasing (CP\(_{it}\)), and purchase amount of the prior transaction (logAMOUNT\(_{it}, t - 1\)). Lastly, we also estimate a binary probit model of the probability of receiving any other type of direct contact; latent utility associated with receiving a direct contact (DIR\(_{it}\)) is a linear function of the time since the prior transaction (logTIME\(_{it}\)), purchase amount of the prior visit (logAMOUNT\(_{it}, t - 1\)), direct contact frequency (DFREQ\(_{it}\)), and cross purchasing history (CP\(_{it}\)).

Our empirical model also includes several other variables that are not central to our hypotheses but account for observed customer heterogeneity and influence automotive service purchase behavior: PV\(_{it}\), a binary indicator variable of whether the vehicle being serviced was purchased at the dealership (= 1) or elsewhere (= 0); the age of the vehicle being serviced, in years (VA\(_{it}\)); and the total number of vehicles customer \(i\) had serviced over the observed data collection period (NV\(_i\)). Lastly, binary indicator variable, WAR\(_{it}\), represents whether the services purchased included work covered by vehicle warranty (= 1) or not (= 0).

We account for unobserved customer heterogeneity by including customer-specific random effects in each equation: \(\eta_i \sim N(0, \sigma^2_\eta)\), \(\theta_i \sim N(0, \sigma^2_\theta)\), \(\phi_i \sim N(0, \sigma^2_\phi)\), and \(\lambda_i \sim N(0, \sigma^2_\lambda)\). Error terms in each of the four equations are normally distributed—\(\epsilon_{it} \sim N(0, \sigma^2_{\epsilon})\), \(\xi_{it} \sim N(0, \sigma^2_{\xi})\), \(\nu_{it} \sim N(0, 1)\), and \(\psi_{it} \sim N(0, 1)\)—and our formulation allows for correlated errors across the four equations. Correlated errors within customer are also a concern and can lead to underestimation of standard errors. We correct for this by incorporating cluster-robust standard errors (“sandwich estimators”) that allow for error heteroscedasticity and flexible error correlation within customer (Williams 2000; Wooldridge 2002). We simultaneously estimate the system of equations using simulated maximum likelihood estimation (Greene 2011).
The posttransaction satisfaction ratings include a number of missing values because not all survey requests received a customer response. We imputed missing values for ratings using a Heckman (1979) modeling approach to allow for any potential selection bias, with a binary probit submodel representing the probability of a survey response and the predicted satisfaction ratings estimated as an ordered probit submodel because the satisfaction rating values are not normally distributed. Probability of survey response was estimated as a linear function of characteristics of the service experience being evaluated (purchase amount, type of services purchased, number of services purchased, purchase visit number) and experience with the service provider (survey frequency, direct contact frequency, cross purchasing, average services per transaction purchased in prior visits, whether the vehicle serviced was purchased at the dealer). Ratings were estimated as a linear function of characteristics of the service experience being evaluated (purchase amount, type of services purchased, number of services purchased) and experience with the service provider (survey frequency, direct contact frequency, cross purchasing, average services per transaction purchased in prior visits). The imputation model results indicated a significant error correlation, $\rho = .532$, $\chi^2(1) = 6.32$, $p < .02$, indicating the need to correct for selection. Further details about the imputation method and results are available from the authors.

Results

Overall, we find support for five of our seven hypotheses and our results offer new and valuable insights into the interplay of relational communications and managing the customer relationship. Table 2 summarizes the estimated results.

Posttransaction Satisfaction Surveys

Receiving a satisfaction survey after the prior transaction had a significant positive effect on both purchase amount ($a_{SVY} = 0.187$, $p < .001$) and interpurchase time ($b_{SVY} = 0.739$, $p < .001$). This indicates that, on average, receiving a survey increases purchase amount at the subsequent service transaction, supporting Hypothesis 1a. However, in contrast to our prediction in Hypothesis 1b, receiving a survey also increases the time until the customer returns for a repeat purchase visit. This suggests the potential for a long-term undesirable effect of satisfaction surveys on total spending over time if the increased purchase amount per transaction is countered by fewer total transactions.

A customer’s history of receiving posttransaction surveys also impacted purchase behavior. Purchase amount increased with survey frequency ($a_{SFREQ} = 0.320$, $p < .001$), though at a decreasing rate as the proportion of prior transactions with surveys increased ($a_{SFREQ^2} = -0.234$, $p < .03$). Interpurchase time decreased with survey frequency ($b_{SFREQ} = -0.206$, $p < .001$) up to a point but then began to increase at higher levels of survey frequency ($b_{SFREQ^2} = 0.435$, $p < .001$), following a U-shaped pattern. Both of these nonlinear patterns indicate that the beneficial impacts of satisfaction surveys on purchase behavior have diminishing marginal returns as survey frequency increases.

As further evidence of this, and in support of Hypothesis 2, the proportion of prior transactions with surveys significantly moderated the impact of receiving an additional survey request after the most recent transaction: we found a negative interaction between survey frequency and a recent satisfaction survey after the most recent transaction: we found a negative interaction between survey frequency and a recent satisfaction survey ($a_{svy*sfreq} = -0.142$, $p < .01$), with a positive interaction between survey frequency and receiving a satisfaction survey for interpurchase time ($b_{svy*sfreq} = 0.158$, $p < .02$). More frequent surveys dampened the positive effect of a satisfaction survey on purchase amount considerably, as illustrated in Figure 1, Panel A. In contrast, high survey frequency led to a slightly steeper increase in interpurchase

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Predictor Variables</th>
<th>Purchase Amount</th>
<th>Interpurchase Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis 1</td>
<td>Satisfaction survey</td>
<td>$0.187^{***}$</td>
<td>$0.739^{***}$</td>
</tr>
<tr>
<td></td>
<td>Survey frequency</td>
<td>$0.320^{***}$</td>
<td>$-0.206^{***}$</td>
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<td></td>
<td>Survey frequency$^2$</td>
<td>$-0.234^{**}$</td>
<td>$0.435^{***}$</td>
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<tr>
<td></td>
<td>Direct contacts</td>
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<td></td>
<td>Prior cross purchasing</td>
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<td>$-0.050^{***}$</td>
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<td>Hypothesis 2</td>
<td>Satisfaction survey $\times$ survey frequency</td>
<td>$-0.142^{**}$</td>
<td>$0.158^{**}$</td>
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<td>Hypothesis 3</td>
<td>Satisfaction survey $\times$ prior cross purchasing</td>
<td>$-0.184^{***}$</td>
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<td></td>
<td>Survey frequency $\times$ prior cross purchasing</td>
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<td>$0.020$</td>
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<td></td>
<td>Survey frequency $\times$ prior cross purchasing</td>
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<td>$-0.079^{**}$</td>
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<td>Hypothesis 4</td>
<td>Service type—vehicle maintenance</td>
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<tr>
<td></td>
<td>Service type—major maintenance</td>
<td>$1.039^{***}$</td>
<td>$0.044^{*}$</td>
</tr>
<tr>
<td></td>
<td>Service type—repair</td>
<td>$0.853^{***}$</td>
<td>$0.054^{***}$</td>
</tr>
<tr>
<td></td>
<td>Service type—body work</td>
<td>$1.435^{***}$</td>
<td>$0.107^{***}$</td>
</tr>
<tr>
<td></td>
<td>Service type—other</td>
<td>$-0.032$</td>
<td>$-0.071^{***}$</td>
</tr>
<tr>
<td></td>
<td>Customer satisfaction rating</td>
<td>$0.008$</td>
<td>$0.006$</td>
</tr>
<tr>
<td></td>
<td>Intercept</td>
<td>$2.515^{***}$</td>
<td>$2.648^{***}$</td>
</tr>
<tr>
<td></td>
<td>Customer heterogeneity (SD)</td>
<td>$0.311^{***}$</td>
<td>$0.315^{***}$</td>
</tr>
</tbody>
</table>

*,$p < .10$. **,$p < .05$. ***,$p < .01$ (two-tailed test).
Cross purchasing level decreased interpurchase time, on average ($b_{CP} = -0.050, p < .001$; Table 2) and had a significant negative interaction with survey frequency ($\beta_{SFREQ \times CP} = -0.079, p < .03$); the interaction with survey was not significant ($\beta_{SVY \times CP} = 0.020, p = .317$). Other cross purchase effects on purchase amount were nonsignificant ($a_{CP} = 0.014, p = .385$; $a_{SVY \times CP} = -0.015, p = .400$; $a_{SFREQ \times CP} = -0.025, p = .472$).

The combination of cross purchasing effects is illustrated in Figure 2 (for purchase amount) and Figure 3 (for interpurchase time). The figures demonstrate how cross purchasing moderates the “Survey Frequency x Recent Survey” relationship more dramatically for purchase amount than for interpurchase time. Among customers with low cross purchasing, a satisfaction survey has a much stronger positive impact on purchase amount when survey frequency is low versus high (Figure 2, Panel A). In contrast, we see similarly milder positive effects of receiving a satisfaction survey, regardless of survey frequency, when cross purchasing is high (Figure 2, Panel B), though the effect of receiving a survey is a bit stronger with low survey frequency.

Such stark differences in the Survey Frequency x Recent Survey relationship are not as apparent for interpurchase time, though the relationship differs across cross purchasing levels in an important way, as shown in Figure 3. Among low cross purchase customers, the positive impact of a survey is lessened/flatter when survey frequency is high (vs. low; Figure 3, Panel A). However, the opposite is true for customers with high cross purchasing: receiving a survey has an enhanced/steeper positive impact with high survey frequency (Figure 3, Panel B).

These interaction effects, taken together, reveal nuanced differences across cross purchasing customer segments. The beneficial impact of receiving a satisfaction survey on purchase amount was strongest (steepest) for customers with low cross purchasing and very few surveys for prior transactions; there was a more subtle desirable impact on purchase amount for all customers with high cross purchasing and for customers with low cross purchasing/high survey frequency. Satisfaction surveys lengthened interpurchase time to similar degrees across all customers, though the increase was weakened with higher survey frequency among low cross purchasing customers and strengthened with higher survey frequency for high cross purchasing customers.

**Cross Purchasing**

We examined whether prior cross purchasing influences the nature of how recurring satisfaction surveys impact purchase behavior. We tested Hypothesis 3 by estimating the interaction between cross purchasing, survey frequency, and receiving a survey after the most recent transaction: results yielded positive interaction effects on purchase amount ($a_{SVY \times SFREQ \times CP} = 0.091, p < .02$; Table 2) as well as on interpurchase time ($\beta_{SVY \times SFREQ \times CP} = 0.094, p < .03$). These estimates are consistent with Hypothesis 3b, though not with Hypothesis 3a.

**Other Direct Contacts**

Our fourth hypothesis predicts that the impact of a direct contact on purchase amount is influenced by whether the service provider also sends a satisfaction survey to the customer. Direct contacts, on their own, exhibit a positive influence on purchase amount ($a_{DIR} = 0.110, p < .01$). However, results indicated a significant negative interaction between satisfaction surveys and other direct contacts ($a_{SVY \times DIR} = -0.184, p < .001$), supporting Hypothesis 4. This suggests a negative synergistic relationship between satisfaction surveys and other direct contacts;
when both a satisfaction survey and (one or more) other forms of direct contacts are received by a customer prior to a purchase visit, their combined effect is positive ($a_{SVY} + a_{DIR} + a_{SVY\times DIR} = 0.113$) but not fully additive. Figure 4 illustrates that the impact of receiving a direct contact is positive when the customer did not receive a survey after the prior transaction but that effect is offset if a survey was received as well. In that case, the collective impact of receiving both a survey and other direct contact is less positive than receiving either one alone. This might also suggest a type of “ceiling effect” of direct contacts on purchase behavior whereby the contacts have a diminishing rate of return on purchase amount.

In sum, across both of our focal purchase behaviors—purchase amount and interpurchase time—we find support for all but two of the seven hypothesized effects (see Table 3). We note that customer satisfaction rating had no significant effect on predicted purchase behavior; there was no significant effect of rating on purchase amount ($a_{RAT} = -0.008$, $p = .259$) or on interpurchase time ($b_{RAT} = 0.006$, $p = .381$).

**Discussion**

Posttransaction satisfaction surveys play a dual role of service experience assessment and bidirectional relational contact, so it is essential for researchers and managers to
understand their impact on customer purchase behavior. In this study, we pursue a better understanding of individual-level customer purchase behavior in response to recurring surveys. Our research considers a context that is representative of numerous service sectors where customers receive surveys after many of their transactions with a company. The findings of our study contribute to knowledge about cumulative satisfaction survey effects in purchase contexts involving longer term customer-firm relationships. Our research contributes to the mere measurement literature by offering evidence of the prominence of positivity effects related to satisfaction surveys in field settings. Our results show, however, that the positive effects decrease over time. We consider how these outcomes vary across a firm’s customers by examining whether the purchase behavior responses of customers who cross purchase more services differ from those who cross purchase fewer services. Further, we study the effects of satisfaction surveys in combination with other individualized direct contacts, contributing to a relatively unexplored research area.

Implications for Research

Our findings have implications for the study of feedback solicitation and understanding how and why measurement effects persist over time (Dholakia and Morwitz 2002). We find that the impact of recurring satisfaction surveys may not be as positive in all cases as prior research on survey participation effects suggest. As such, our findings offer fine-grained insights into the mechanism by which survey requests impact customers’ purchase behavior and tell an important story about how customer reactions to surveys evolve over time.

Consistent with prior research, we find that a satisfaction survey has a positive impact on purchase amount. As survey frequency increases, however, there is a diminishing marginal increase in spending from an additional posttransaction survey. Customers with higher survey frequency exhibit a smaller purchase amount increase after a survey compared to those with lower survey frequency. Additionally, we find that a posttransaction survey tends to delay time to the next service transaction, and the lengthening of time between transactions is amplified for customers with higher survey frequency. These findings highlight the importance of understanding this phenomenon as a dynamic process over time since customers behave differently relative to their contact history.

Our research is focused on an area of the marketing literature where important empirical studies lead to opposing predictions. While there is strong evidence that satisfaction surveys have a positive impact on behaviors (e.g., Dholakia, Morwitz, and Westbrook 2004), there also is substantial evidence that repeated survey requests can lead to negative customer reactions (e.g., Adams and Umbach 2012). We draw on perspectives that help to explain why frequently recurring surveys do not generate purchase behaviors that are as consistently positive as reactions to less frequent surveys. It can be argued that our research helps to address the divergence between the opposing predictions derived from results reported in prior studies.

From an equity theory perspective, it is likely that customers feel more burdened over time as they expend effort to provide satisfaction evaluations to the firm but receive little in return. In some contexts, this gradual shift to perceived inequity may be more effectively prevented by firms. Allen, Dholakia, and Basu (2016) study customer outcomes in a context where panel members had elected to join an online panel and, when they responded to surveys, received financial incentives which they could redeem in subsequent shopping trips. In this type of scenario, it is possible that surveys’ positive effects may decline much more slowly, or even not decline at all. This highlights the benefits of considering the important phenomenon of satisfaction survey effects in varying contexts, using various analytical approaches, and considering differing influences.

A number of empirical studies report significant customer-level moderating effects related to prior purchase experience with the firm. Our results indicate that, counter to our prediction, which was informed by prior studies (e.g., Borle et al. 2007), the diminishing marginal increase in purchase amount with each additional survey is less potent for customers with relatively higher cross purchasing history. While these customers’ spending change is less sensitive to frequency, their interpurchase time increase is not. As predicted, the lengthening of time between transactions is amplified as survey frequency increases for higher cross purchasing customers. Overall, the findings highlight the importance of understanding how the impact of surveys on purchase behavior evolves over time since customers behave differently relative to their purchase history.
A question that should be considered is why certain effects are different across our outcome variables. In addition to outcome behavior differences in our moderating analyses, the main effect of increased interpurchase time was counter to our default expectation. However, the finding is consistent with research results indicating that customers delayed time to the next purchase after a satisfaction survey (Dholakia, Singh, and Westbrook 2010). Interestingly, Allen, Dholakia, and Basuroy (2016) also found differing outcome effects in that their high survey participation panel members had greater number of purchases and greater cross purchasing but not higher spending. Collectively, these studies’ results indicate that outcome variable differences warrant further conceptual investigation.

Our findings suggest that negative synergy may exist between satisfaction surveys and other direct contacts. While it is important to note that both satisfaction surveys and other direct contacts increase spending independently, purchase amount increases to the lowest degree when surveys are used in conjunction with other direct contacts prior to a service transaction (vs. either a survey alone or a direct contact alone). It is intriguing to consider what accounts for this negative interaction effect. Do other direct contacts make surveys seem more intrusive (or perhaps vice versa)? Do other direct contacts lead customers to perceive they are receiving surveys more frequently than they actually are? Researchers have observed that customers can respond negatively to intensive communications from a firm when the contacts appear opportunistic (e.g., Srivastava and Chakravarti 2009). However, we have limited knowledge about the factors that lead customers to perceive contacts as being opportunistic rather than beneficial.

While research offers emerging evidence of negative synergistic effects between different marketing communication modes (e.g., Dong, Janakiraman, and Xie 2014), there is scant investigation of prominent forms of individualized direct contacts such as those considered in this study. Our findings offer evidence of the potential of negative synergistic effects between satisfaction surveys and other direct contacts administered to customers by a firm. However, it is important for additional research to investigate this type of interaction effect with a more detailed analysis. Because our analysis involved the aggregation of varying forms of direct contacts, our findings cannot convey how the interaction effects of satisfaction surveys and different direct contacts may vary. For example, the interaction of satisfaction surveys with birthday greetings may differ in relation to the interaction with service scheduling reminders. It is possible that researchers may discover that satisfaction surveys positively influence the effect of some types of contacts.

In summary, relational communication can provide psychological benefits that motivate customers to engage in repeated exchanges with the firm, and customer-firm closeness is reflected by frequent and varied interactions (Mende, Bolton, and Bitner 2013). A satisfaction survey that serves as relational communication may motivate positive inferences, for example, by triggering customer perceptions that the firm is willing to defer to customer preferences in order to provide more value. However, if customers sense that the surveys are not a sincere solicitation of customer input or believe that the firm fails to sufficiently acknowledge or reward customer input, the survey can have a distancing effect that increases with repeated incidents.

**Implications for Practice**

Our findings suggest that soliciting customer feedback after every service visit could be detrimental to the firm in the long run. Service providers will yield the greatest marginal financial benefit (i.e., largest spending increase) when they request posttransaction satisfaction feedback from those customers who have the least purchase and contact experience with the firm. However, any financial benefit of recurring posttransaction surveys is accompanied by the risk of delaying time until the customer’s next purchase visit, especially for customers with more limited purchase history. The resultant decrease in purchase frequency may overshadow any increase in spending due to posttransaction satisfaction surveys. It is possible that when the increased marginal purchase amount is combined with the accompanying extended interpurchase time, the combined effect on total firm revenues can be negative over time. Extrapolated over the entire customer base, the loss in potential revenue could be substantial. The posttransaction survey frequency “sweet spot” that optimally balances spending and purchase frequency is an empirical question to be resolved by each service provider.

Our results are consistent with Dong, Janakiraman, and Xie’s (2014) suggestion that customers may exhibit a backlash related to a high volume of feedback requests. Customers who
are subject to this higher survey frequency may be more inclined to believe the firm’s behavior is not genuinely relational, and so may postpone their next visit, perhaps due to annoyance or displeasure. Firms would benefit from tracking a customer’s survey history in addition to purchase behavior patterns. This information will allow firms to monitor and manage their relational communications to keep the effects as positive as possible.

Knowledge of customer differences is paramount because when firms are able to segment customers according to varying responses, sample selection, and follow-up marketing interventions can be carefully targeted, minimizing negative effects. We examined purchase intensity (total number of different types of services purchased) because it represents usable information about cross purchasing that most firms collect and can apply with limited complexity. For example, surveys might be bypassed when a purchase amount is smaller than that customer’s norm to help mitigate perceptions of indiscriminate, superficial contacts. Otherwise, service firms may achieve minimal gains in customer spending and may inadvertently defeat their own goal of encouraging customers to return soon. Our results reinforce the message that caution is needed to avoid excessive use of communications, even those that are relational in nature.

Finally, our results underscore the need for careful tracking and analysis of the combined influence of satisfaction surveys and other direct contacts. Although these two types of relational communication are effective independently, we found that the combined effect is not additive—the positive impact of receiving both is less than the sum of the individual contact types, indicating that customer response may be muted by an interaction of the two. This result is consistent with prior research that found negative synergies between different types of marketing communications (Danaher and Dagger 2013). Coordination is necessary, and companies will benefit from developing optimization algorithms to maintain an ideal balance when satisfaction surveys are used in combination with other direct contacts. With this approach, firms can maximize the potential synergies of contacts within their communication portfolios.

**Limitations and Further Research**

Our study aims to allow a deeper understanding of the effects of recurring satisfaction surveys, including the boundary effects of individual-level purchase intensity and the synergistic effects with other forms of direct contacts. A limitation of our study is that our analysis of the effects of recurring satisfaction surveys on customer purchase amount and interpurchase time is limited to one context, automobile dealership service. Examining multiple contexts would have been challenging given the complexity of our data, which combined customer transaction data and relationship management contact data over a multi-year period. Nevertheless, additional research is necessary to reinforce our findings across other industries and companies that use satisfaction surveys to determine how customer responses may differ across contexts. Differences in the moderating effects of customers’ purchase intensity with the firm and the interaction effects of surveys with other nonsurvey direct contacts should also be explored in other contexts. Future research could study the effects of satisfaction surveys across different technologies and types of services, for example, contexts with higher purchase frequency and lower average purchase amount.

Future research may also offer insights by examining the effects of posttransaction satisfaction surveys on different outcomes. While we examine two purchase behavior outcomes—purchase amount and interpurchase time—it would be beneficial to investigate share of wallet as an outcome to determine whether the effects of recurring satisfaction surveys impact not only purchasing with the focal service provider but relative purchasing compared to competitors (Keiningham et al. 2014). It would also be beneficial to extend our findings related to interpurchase time by examining the effects of repeated surveys on customer defection.

Finally, we encourage future studies that investigate the extent to which satisfaction surveys lead customers to form negative inferences about their closeness with a service provider and how those inferences evolve over time with repeated surveys. Our study examined long-term behavioral impacts of recurring surveys, but it is also vital to further understand their effects on customer perceptions and attitudes toward the service provider. As an example, research in psychology suggests that, in interpersonal relationships, repeated requests for feedback and positive affirmations from a partner can lead to perceptions of insecurity within the relationship and, ultimately, negative outcomes (e.g., Maslow 1942). Drawing from diverse perspectives to understand these important latent constructs will be crucial for optimizing the balance between attaining customer feedback and maximizing returns on the customer-firm relationship.

**Author’s Note**

All three authors contributed equally.

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**References**


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