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The Value of Different Customer Satisfaction and Loyalty Metrics in Predicting Business Performance

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Managers commonly use customer feedback data to set goals and monitor performance on metrics such as "Top 2 Box" customer satisfaction scores and "intention-to-repurchase" loyalty scores. However, analysts have advocated a number of different customer feedback metrics including average customer satisfaction scores and the number of "net promoters" among a firm's customers. We empirically examine which commonly used and widely advocated customer feedback metrics are most valuable in predicting future business performance. Using American Customer Satisfaction Index data, we assess the linkages between six different satisfaction and loyalty metrics and COMPUSTAT and CRSP data-based measures of different dimensions of firms' business performance over the period 1994–2000. Our results indicate that average satisfaction scores have the greatest value in predicting future business performance and that Top 2 Box satisfaction scores also have good predictive value. We also find that while repurchase likelihood and proportion of customers complaining have some predictive value depending on the specific dimension of business performance, metrics based on recommendation intentions (net promoters) and behavior (average number of recommendations) have little or no predictive value. Our results clearly indicate that recent prescriptions to focus customer feedback systems and metrics solely on customers' recommendation intentions and behaviors are misguided.

Key words: customer satisfaction; marketing metrics; marketing strategy
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Introduction

Managers often use customer feedback data to set goals and monitor performance on metrics that they believe to be leading indicators of future business performance (e.g., Hauser et al. 1994, Ittner and Larcker 1998). Firms typically collect feedback data via customer surveys using measures of attribute level and overall satisfaction, behavioral loyalty intentions such as repurchase likelihood and likelihood to recommend, and actual loyalty behaviors such as making recommendations (e.g., Griffin et al. 1995, Morgan et al. 2005). For goal-setting and performance-monitoring purposes, managers value customer feedback metrics that are easy to comprehend and communicate and that have simple and direct predictive relationships with future business performance (e.g., Ittner and Larcker 2003, Reichheld 2003). From this perspective, academic researchers have advocated average customer satisfaction and repurchase intentions (e.g., Anderson et al. 1994, 1997; Fornell 1992), while consultants have advocated loyalty metrics such as likelihood to recommend (e.g., Reichheld 1996, 2003). Meanwhile, in practice, the most widely used metric is a firm's "Top 2 Box" satisfaction score[1] (e.g., Morgan et al. 2005, Myers 1999), and firms that also monitor loyalty in their customer feedback systems typically use intention to repurchase as their primary customer loyalty metric (e.g., Kamakura et al. 2002, Mittal et al. 1998).

However, there currently exists no empirical knowledge concerning which of the metrics available from standard customer feedback systems are of most value in predicting future business performance (e.g., Ambler 2003, Griffin and Hauser 1993, Rust et al. 2004b). This is an important gap in marketing knowledge for a number of reasons. First, while the literature advocates customer feedback systems as a mechanism for developing and protecting customer relationships (e.g., Day 1994, Griffin et al. 1995, Westbrook 2000), little attention has been paid to which metrics direct the firm's attention to the aspects of customer relationships that deliver the greatest future rewards (Griffin and Hauser 1993, Shugan 2005). Second, identifying customer feedback metrics that predict future business performance is key to devel-

[1] The proportion of customers rating their overall satisfaction on the two highest-scoring points on the most commonly used five-point scale.

oping effective marketing control systems that select suitable criteria for setting and communicating marketing goals (e.g., Rust et al. 2004b), track appropriate indicators to evaluate marketing performance (e.g., Morgan et al. 2002), and take early corrective action where necessary (e.g., Fornell 1992). Third, the accounting literature posits that identifying which customer feedback metrics best predict future business performance would provide investors with information with predictive value beyond that provided by accrual accounting information, and thereby contribute to the efficient functioning of financial markets (e.g., Ittner and Larcker 1998, Wallman 1995).

In this paper we empirically address the key question of which of the most commonly used and widely advocated customer satisfaction and loyalty metrics available to managers from their firms' customer feedback systems are the most valuable in predicting future business performance. Using the American Customer Satisfaction Index (ACSI), COMPUSTAT, and CRSP data for the period 1994–2000, we empirically assess the predictive value of firms' performance on six different customer feedback metrics for six measures of their future business performance.

Research Method

Data

To examine the value of different customer feedback metrics in predicting business performance, we selected the companies included in the ACSI database as our sampling frame for three reasons. First, the ACSI provides satisfaction and loyalty data for these companies that correspond very closely to that available to managers from their firms' customer feedback systems. Second, most companies in the ACSI are publicly traded, which allows us to collect business performance data from secondary sources. Third, the ACSI has collected the same data for each of the companies in its database since 1994, allowing us to look at the effects of customer feedback metrics on future business performance. The ACSI collects annual data directly from more than 50,000 U.S. consumers of the products and services of more than 200 Fortune 500 companies (in 40 different industries whose sales account for roughly 40% of U.S. GDP) to measure consumer evaluations of their product/service consumption experiences (see Fornell et al. (1996) for a detailed description of the ACSI's nature and purpose). As detailed below, we also collected data on firms' business performance and on a number of industry- and firm-level control variables. We removed utilities firms from our data set since their monopoly position is atypical, and also removed privately held companies for which required financial data is not available. The final data set contained 569 observations, representing 80 different firms over 7 years (from 1994 to 2000). The descriptive statistics for each of the variables in our data set are presented in Table 1 and are discussed in more detail below.

Measures of Firm Performance. Firms simultaneously pursue a number of different performance objectives (e.g., Hauser and Katz 1998, Greve 2003). Managers therefore often set goals and monitor performance from a "balanced scorecard" perspective using financial, customer, internal, and learning-based metrics, with the relative importance of particular metrics depending on the firm's strategy (e.g., Ambler 2003, Kaplan and Norton 1996). To ensure findings that are applicable to a wide range of business situations faced by managers and investors, we therefore collected data and calculated six different measures of firm performance on a quarterly basis.

1. *Tobin's Q* compares a firm's market value to the replacement cost of its assets (Tobin 1969). Tobin's Q is a measure of firm performance favored by economists because it is risk adjusted, independent of industry, and provides a good indicator of shareholder value (Anderson et al. 2004, Lewellen and Badrinath 1997, Tirole 1997). Tobin's Q has also been used as a proxy measure for brand equity and is therefore of considerable interest to marketing researchers and managers (e.g., Rao et al. 2004). Using COMPUSTAT data we utilized Chung and Pruitt's (1994) method to compute Tobin's Q as (*market value of the firm's common stock shares + book value of the firm's preferred stocks + book value of the firm's long-term debt + book value of the firm's inventories + book value of the firm's current liabilities − the book value of the firm's current assets*)*/(book value of the firm's total assets).* As seen in Table 1, the mean value of Tobin's Q among the firms in our data set during this period is 2.1, while the median value is 1.35.

2. *Net operating cash flows* measures a firm's ability to generate cash and has been advocated as an indicator of shareholder value (Gruca and Rego 2005, Vorhies and Morgan 2003). The accounting literature has advocated the use of cash flows in reliably assessing financial performance because they are less dependent on firms' accounting practices than profits (e.g., Dechow et al. 1998, Neill et al. 1991). We used COMPUSTAT data item 308 which computes net operating cash flows as *income before extraordinary items + depreciation − taxes* (e.g., Gruca and Rego 2005). For the firms in our sample over this period, the annual mean net operating cash flow is over $3.4 billion while the median is over $1.1 billion.

3. *Total shareholder returns* (*TSR*) is a firm's ability to deliver value to its shareholders over a specified period of time by increasing the price of the firm's stock and distributing dividends. TSR is widely used as a performance metric for planning and control purposes as well as for evaluating and rewarding senior

Table 1 Descriptive Statistics ($N = 569$)

Variable	Mean	Std. dev.	Min	Median	Max
Firm performance					
Tobin's Q	2.100	3.081	−0.099	1.346	12.077
Net operating cash flows	3,480.773	5,749.158	−1,150.000	1,131.210	33,764.000
Total shareholder return	0.096	0.544	−0.978	0.057	2.112
Annual sales growth	0.356	2.079	−0.667	0.076	2.461
Gross margin	0.344	0.180	−0.614	0.325	0.862
Market share	12.625	22.446	0.164	2.762	74.120
Customer feedback					
Average satisfaction	7.821	0.585	5.738	7.887	9.014
Top 2 Box (proportion)	0.606	0.143	0.208	0.624	0.871
Complaints (proportion)	0.190	0.115	0.004	0.208	0.486
Net promoters (proportion)	0.299	0.215	−0.486	0.332	0.707
Repurchase likelihood	7.935	0.855	4.910	8.029	9.619
Number of recommendations	10.395	5.872	2.840	8.593	43.977
Firm covariates					
Number of segments	2.898	1.423	1.000	3.000	6.000
Assets (log)	4.084	0.842	−0.670	4.102	5.808
Advertising intensity	0.066	0.371	0.000	0.035	0.282
R&D intensity	0.044	0.045	0.002	0.037	0.208
Industry covariates					
Household income	0.071	0.112	0.000	0.026	0.653
Demand growth	0.218	0.094	−0.468	0.094	1.196
Industry dummies					
Services	0.389	0.488	0.000	0.000	1.000
Direct	0.539	0.499	0.000	1.000	1.000
Long	0.356	0.479	0.000	0.000	1.000

managers. Using data from CRSP and COMPUSTAT, we calculated 12-month TSR as the firm's stock price at time $t+4$ quarters minus stock price at time t, plus dividends during the four-quarter period (Hayward 2003). The mean TSR for the firms in our data set is slightly less than 10%, while the median TSR is slightly less than 6%.

4. *Sales growth* is a measure of firm performance that is often closely associated with the marketing function (Ambler 2003). We used COMPUSTAT data to compute 12-month sales growth for all companies in our sample. The mean 12-month sales growth for the firms in our data set over this period is over 35%, while the median is slightly less than 8%.

5. *Gross margin* is the ratio of gross profit (sales revenue − cost of sales) to sales revenue and is an indicator of the firm's value chain, specifically measuring the ability to convert costly inputs into valuable outputs (Ittner and Larcker 1998). The mean gross margin for the firms in our data set over this time period is slightly greater than 34% and the median is 32.5%.

6. *Market share* is a measure of business performance that is often used as a metric for assessing marketing efforts (Fornell 1995, Montgomery and Wernerfelt 1991). We used the entire COMPUSTAT database and the North American Industry Classification System (NAICS) industry definitions to collect industry aggregate sales. We then divided the individual firm's sales by the industry aggregate sales to obtain market shares for all the companies in our data set.[2] As seen in Table 1, the mean market share for the firms in our data set during this period was 12.62%, while the median was slightly less than 3%.

Overall, these six measures provide indicators of the most important aspects of a firm's short-term (e.g., gross margin) and long-term (e.g., Tobin's Q) performance, using both historical accrual accounting information-based measures (e.g., cash flows and gross margin) and more forward-looking financial market- (e.g., TSR and Tobin's Q) and customer market-based (e.g., market share and sales growth) measures. Since all six indicators exhibited nonnormal distributions, we followed the standard accounting and finance research practice of normalizing the data using a log transformation[3] (Sloan 1996). A subsequent White's test confirmed the appropriateness of this transformation.

[2] External validity for this measure was assessed by comparing it to the market share figures provided by *Market Share Reporter*, for a sample of 15% of the firms in the database. The correlation between the two sets of measures was 0.89.

[3] To utilize all available data points and preserve continuity of the variables, the log transformation for gross margin, cash flows, Tobin's Q, TSR, and sales growth was applied to (variable + 1). Since a number of cash flow observations have negative values greater than −1, the log transformation was applied to (1/(−variable)) for these observations (Sloan 1996).

Measures of Customer Feedback. The National Quality Research Center (NQRC 1994) at the University of Michigan provided us with ACSI data that correspond to the types of data that are captured in most firms' customer feedback systems. This allowed us to compute customer satisfaction and loyalty metrics that are consistent with those most commonly used in practice and advocated in the literature. We constructed six different customer feedback metrics; the first three are indicators of customer satisfaction while the remaining three are indicators of customer loyalty.

1. *Average customer satisfaction score* is the arithmetic mean score on the three specific indicators used to estimate the ACSI latent satisfaction index. These are consumer responses to questions concerning overall satisfaction, expectancy disconfirmation, and performance versus their ideal product or service in the category (e.g., Fornell et al. 1996).[4] While we utilize the average of the three items because of the superior measurement properties of multi-item scales, the correlation with the single "overall satisfaction" indicator is above 0.9, suggesting that the scale is also a good proxy for the single-item overall satisfaction metric used by many firms in practice. The mean and median average customer satisfaction scores for the firms in our data set over this time period were both slightly over 7.8 on a 10-point scale.

2. *Top 2 Box customer satisfaction score* refers to the two highest-scoring points on the five-point scale that firms typically use to capture customer satisfaction. Because the ACSI uses 10-point satisfaction scales, we operationalized this metric as the proportion of customers surveyed that rated the firm in the top 4 points on the 10-point single-item "overall satisfaction" ACSI scale (e.g., Ittner and Larcker 1998).[5] The mean and median Top 2 Box customer satisfaction scores for the firms in our data set over this time period were marginally above 0.6, indicating that more than 60% of surveyed consumers rated the average firm in the Top 2 Boxes.

3. *Proportion of customers complaining* is the number of consumers of a firm's products and services that voice dissatisfaction with their consumption experience relative to those who do not. We calculate this metric using the ACSI "voice" variable that comprises two items that ask if the consumer has either formally (as in writing or by phone to the manufacturer or service provider) or informally (as to others) complained about the product or service. For the firms in our data set over this time period, the mean proportion of surveyed customers who reported having voiced a complaint was 19%, while the median was 20%.

4. *Net promoters* is the percentage of a firm's customers who make positive recommendations of the company or its brands to others minus those who do not, which has recently been advocated as the single most valuable customer feedback metric in predicting future business performance (Reichheld 2003). We utilize ACSI data concerning consumer responses to the questions "Have you discussed your experiences with [brand or company x] with anyone?" and "Have you formally or informally complained about your experiences with [brand or company x]?" The first question measure both positive and negative recommendations, while the second question measures negative recommendations. We computed net promoters as the number of a firm's surveyed customers that reported discussing their consumption experiences minus the number of the firm's surveyed customers that reported formally or informally complaining expressed as a proportion of the total number of a firm's surveyed customers. The mean and median net promoter scores in our data set over this time period were around 0.3.

5. *Repurchase likelihood* is a customer's stated probability of purchasing from the same product or service provider in the future, and has previously been empirically linked with firms' future financial performance (Anderson et al. 1994). We use data from the ACSI that asks consumers to rate "How likely are you to repurchase this brand/company?" on a 10-point scale for this loyalty metric. For the firms in our data set over this time period, the mean and median repurchase likelihood scores were around eight.

6. *Number of recommendations* is the number of people to whom consumers of a firm's product or service who engaged in positive word-of-mouth (WOM) behavior as captured in our net promoters variable report having recommended the brand or company (Anderson 1998). This ACSI measure asks surveyed consumers "With how many people have you discussed [brand or company x]?" We averaged this metric at the firm level, representing the average number of people to whom the surveyed customers of a firm who engaged in positive WOM have recommended the brand or company. The mean number of recommendations for the firms in our data set over this time period was slightly greater than 10 while the median was close to 6.

Covariates: Capturing Different Circumstances Facing Firms and Customers. To control for the effects of differing circumstances facing firms and

[4] We use the simple average of the three items because this is the metric most likely to be used by managers in practice. The correlation between the simple average and the ACSI latent variable is 0.993, and the results of our analyses hold whether using the mean of the three items or the latent variable.

[5] Because some firms use Top Box scores (the proportion of their customers who are "very satisfied"), we also operationalized this using the proportion of each firm's customers reporting scores of 9 or 10 on the ACSI's overall satisfaction question and obtained very similar results to those obtained with the Top 2 Box measure.

their customers in our data set, we include a number of quarterly firm- and industry-level covariates in our analyses.

Firm-Level Covariates.

Number of segments. We used COMPUSTAT data concerning the number of distinct business segments in which each has business operations to control for any economies of scope that may impact business performance (e.g., McGahan and Porter 1997). As seen in Table 1, the average firm in our data set over this time period operated in three or less business segments.

Advertising and R&D intensity. Using COMPUSTAT data we computed firms' relative (to sales revenue) advertising and R&D expenditures since both are believed to be positively associated with a firm's ability to bring superior products to market and to more effectively communicate their benefits (e.g., Boulding and Staelin 1995, Erickson and Jacobson 1992). The mean advertising and R&D expenditure among the firms in our data set over this period was 6.6% and 4.4% of sales revenue while median values were 3.5% and 3.7%, respectively.

Size. We used COMPUSTAT data to compute the natural log of each firm's assets to control for any scale economies that may impact business performance. The mean asset value of the firms in our data set over this time period was \$59 billion while the median was \$60 billion.

Industry-Level Covariates.

Hirschmann-Herfindahl index (*HHI*) is the sum of the square of all suppliers' market shares in an industry. This is the most widely used indicator of market structure (Curry and George 1983) and has been shown to affect firm performance (e.g., Montgomery and Wernerfelt 1991, Tirole 1997). We used our market share data described above to compute HHI values for each of the industries in our data set and scaled these values to be between zero (competitive) and one (concentrated). The mean and median HHI values of 0.071 and 0.026, respectively, indicate that the industries in our data set for this period are highly competitive.

Demand growth. We used COMPUSTAT data to compute the average 12-month growth in industry sales to control for the differing industry demand conditions facing the firms in our data set (Finkelstein and Boyd 1998). The mean level of demand growth for the industries in our data set over this time period was almost 22% while the median growth level was over 9%.

Industry characteristics. To control for other industry effects not captured elsewhere, we included three dummy variables in our analyses: ACSI sector definitions to identify service-focused versus physical goods-focused firms, annual reports to identify firms that market direct to their end-user consumers versus those using intermediaries, and the ASCI survey data collection protocol to indicate firms that face longer versus shorter interpurchase cycles.[6] In our data set slightly less than 39% of the firms are service businesses, slightly less than 54% sell direct to consumers, and slightly more than 35% have long interpurchase cycles among consumers.

Table 2 contains the bivariate correlations among the variables in our data set. These indicate that each customer feedback metric variable is significantly correlated with between three and six of the firm performance variables. However, two of the three customer loyalty variables, net promoters and repurchase likelihood, are significantly negatively related to gross margin performance, and net promoters is also significantly negatively correlated with Tobin's Q. The correlations also reveal that while the majority of the customer feedback metrics are highly correlated with one another in the expected directions, the proportion of customers complaining is positively correlated with both net promoters and number of recommendations made. In addition, both number of recommendations and net promoters are also significantly negatively correlated with the third customer loyalty metric, repurchase likelihood, and have weak or insignificant relationships with the other two customer satisfaction metrics. The relative weakness observed in the correlations among the six business performance dependents supports our research design decision to examine multiple different aspects of business performance.

Model Formulation

We examine the associations between the six customer satisfaction and loyalty metrics and firms' future business performance via a series of regressions as detailed below:

$$\begin{aligned} Q_{t+3} &= \beta_{Q0} + \beta_{Q1} \cdot CUSTOMER\ FEEDBACK\ METRIC_k \\ &\quad + \beta_{Q2} \cdot SEGMENTS_t + \beta_{Q3} \cdot SIZE_t + \beta_{Q4} \cdot ADV_t \\ &\quad + \beta_{Q5} \cdot RD_t + \beta_{Q6} \cdot HHI_t \\ &\quad + \beta_{Q7} \cdot DEMAND\ GROWTH_t + \beta_{Q8} \cdot SERVICES_t \\ &\quad + \beta_{Q9} \cdot DIRECT_t + \beta_{Q10} \cdot LONG_t + \varepsilon_{Qt}, \\ CF_{t+2} &= \beta_{CF0} + \beta_{CF1} \cdot CUSTOMER\ FEEDBACK\ METRIC_k \\ &\quad + \cdots + \varepsilon_{CFt}, \\ TSR_{t+2} &= \beta_{TSR0} + \beta_{TSR1} \\ &\quad \cdot CUSTOMER\ FEEDBACK\ METRIC_k \end{aligned}$$

[6] We used a median split dummy coding such that products or services with interpurchase cycles longer than three months were classified as long, while those with interpurchase cycles of three months or less were coded as short.

Table 2 Construct Intercorrelations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Tobin's Q	1.000																	
2. Cash flow	0.013‡	1.000																
3. TSR	0.096‡	−0.085†	1.000															
4. Sales growth	0.217‡	−0.292‡	0.186‡	1.000														
5. Margin	0.391‡	−0.017‡	0.043‡	0.099†	1.000													
6. Market share	0.169‡	0.611‡	−0.044‡	−0.194‡	−0.157‡	1.000												
7. Average satisfaction	0.313‡	0.170‡	0.109†	0.134†	0.108	0.224‡	1.000											
8. Top 2 Box satisfaction	0.359‡	0.246‡	0.102†	0.146‡	0.133†	0.271‡	0.945‡	1.000										
9. Complaints (prop)	−0.348‡	−0.329‡	−0.008‡	−0.142‡	−0.335‡	0.202‡	−0.540‡	−0.472‡	1.000									
10. Net promoters (prop)	0.019†	0.141†	−0.044‡	−0.109†	−0.194‡	0.371‡	0.331‡	0.421‡	−0.179‡	1.000								
11. Repurchase likelihood	0.271‡	0.176‡	0.046‡	0.101†	0.220†	0.306‡	0.657‡	0.488‡	−0.668‡	−0.042‡	1.000							
12. Number of recommendations	−0.043‡	0.246‡	0.035†	−0.012†	−0.152†	0.344‡	0.007‡	0.056†	0.269‡	0.362‡	−0.169‡	1.000						
13. Number of segments	0.036‡	0.051‡	−0.003‡	0.012‡	0.091‡	0.093‡	0.174‡	0.159‡	−0.190‡	−0.107†	0.202‡	−0.159‡	1.000					
14. Assets (log)	0.158‡	0.911‡	−0.022‡	0.326‡	−0.023‡	0.532‡	0.067‡	0.154‡	0.421‡	0.094‡	−0.286‡	0.272‡	0.142‡	1.000				
15. Advertising intensity	0.165‡	−0.413‡	−0.156‡	0.610‡	−0.219‡	0.432‡	0.213‡	0.225‡	−0.524‡	−0.115‡	0.338‡	−0.223‡	−0.033‡	−0.231‡	1.000			
16. R&D intensity	−0.159‡	0.048‡	0.068‡	0.452‡	−0.163‡	−0.105‡	0.021‡	0.119	0.476‡	0.668†	−0.442‡	0.497‡	0.093†	−0.248‡	0.049‡	1.000		
17. Household income	−0.156‡	−0.188‡	0.033‡	−0.107‡	−0.084†	0.501‡	0.134‡	0.208‡	0.205‡	0.006‡	−0.189‡	0.157†	0.131‡	0.188‡	−0.107‡	0.027‡	1.000	
18. Demand growth	−0.089†	−0.150‡	0.011‡	0.393‡	−0.038	−0.237‡	−0.166‡	−0.167‡	0.177‡	−0.529‡	−0.197‡	−0.020‡	−0.040‡	0.058‡	−0.015‡	−0.242‡	−0.151‡	1.000

Note. ‡Significant at $p < 0.01$; †significant at $p < 0.05$.

$$+\cdots+\varepsilon_{TSRt},$$

$$SG_{t+1}=\beta_{SG0}+\beta_{SG1}\cdot CUSTOMER\ FEEDBACK\ METRIC_k+\cdots+\varepsilon_{SGt},$$

$$MGN_{t+1}=\beta_{MGN0}+\beta_{MGN1}\cdot CUSTOMER\ FEEDBACK\ METRIC_k+\cdots+\varepsilon_{MGNt},\quad \text{and}$$

$$MS_{t+1}=\beta_{MS0}+\beta_{MS1}\cdot CUSTOMER\ FEEDBACK\ METRIC_k+\cdots+\varepsilon_{MSt},$$

where Q is Tobin's Q, CF is net operating cash flows, TSR is the firm's total shareholder returns, SG is the firm's 12-month sales growth, MGN is the firm's gross margin, and MS is the firm's market share. $CUSTOMER\ FEEDBACK\ METRIC_k$ represents the kth of six customer feedback metrics (average customer satisfaction score, Top 2 Box satisfaction score, net promoters, proportion of customers who complain, repurchase likelihood, and number of recommendations). Given the high correlations between some of our customer feedback metric variables, to avoid potential multicollinearity problems each customer feedback metric variable is entered in a separate equation for each business performance dependent. SEGMENTS is the number of business segments in which the firm operates, ADV and RD are the firm's advertising and R&D intensities, SIZE is the natural log of the firm's assets, HHI is the Hirschmann-Herfindahl index measure of market concentration, DEMAND GROWTH is the 12-month industry sales growth, and SERVICES, DIRECT, and LONG are dummy variables that identify a firm as a service (versus goods) producer, selling directly to its customers (versus using intermediaries), and with longer (versus shorter) interpurchase cycles.

Since a firm's business performance is unlikely to change immediately with changes in customer feedback metrics, we allow for different lags across the different firm performance dependents. We use the "optimal" lag for the analyses we report in this paper, which we identify as the lag for each dependent that maximizes the variance explained by the customer feedback metrics plus the control variables (these lags range between one and three quarters depending on the performance dimension).[7]

We tested for violations of standard regression assumptions concerning model misspecification using Ramsey's (1969) RESET test, normality using the Jarque-Bera test, and heteroskedasticity using the Breusch-Pagan test. None of these violations appear to be either generalized or problematic in our data. In addition, tolerance and VIF statistics well below standard cutoffs indicate no multicollinearity issues in our regressions. To correct for any outlier influence and inefficiency in estimates, we utilize robust regression estimation. Robust regression methods identify influential observations and "correct" for their influence by limiting the weight that these observations have on the estimates (Kennedy 2003, Tatikonda and Montoya-Weiss 2001). This results in larger (robust) standard errors and more conservative test estimates while correcting for the inefficiency of the estimates (Kennedy 2003). We used M estimators, the simplest and most widely used in robust regression, which minimize a less rapidly increasing function of the residuals (usually having a ceiling value) (Huber 1973).[8]

Time-series cross-sectional data sets also present the potential for problems associated with serial correlation. Failure to account for such problems can lead to biased estimates (particularly of the standard errors) and therefore result in inefficient estimates (Kennedy 2003). We performed two standard diagnostics to identify and correct for serial correlation problems in our analyses. First, Hausman tests (Boulding and Staelin 1995, Greene 2003) indicated that fixed-effect corrections are necessary for our regressions. Because we are already controlling for a variety of firm and industry covariates, we accomplished this by introducing year-specific dummies in our analyses (Kennedy 2003). None of the year dummy variables were found to be significant in any of our regressions. Second, Durbin-Watson statistics (Kennedy 2003) suggested that across the 36 different equations being estimated, serial correlation was a significant problem only in regressions in which cash flows and market share were the dependents. Following standard practice in dealing with serial correlation involving cash flows in the accounting literature (e.g., Sloan 1996) and market share in the marketing literature (e.g., Boulding and Staelin 1995), we corrected for these problems by using prior period cash flows and market share as instrumental

[7] Because the ACSI collects and releases information annually but does so in different quarters for different industries, we lag our performance data from the specific quarter in which the ACSI data is collected and released for each firm. We also compared our results using the optimal lags with those obtained using one-quarter and four-quarter lags for each business performance dependent and obtained a similar pattern of results.

[8] Compatible with M estimators, we found no problematic leverage points in our data. We also compared these results with those obtained using S and MM estimators and found that our results were stable across estimators.

variables. Subsequent Durbin-Watson statistics supported the efficacy of using these instrumental variables in our regressions. Overall, we are therefore confident that our analyses correct for the potential serial correlation problems associated with regression analyses using time-series cross-section data. Table 3 summarizes our regression results for the six different business performance dependents.

Results

As expected, the firm and industry control variables in our regressions explain significant variance in each of the six business performance dependents. With R^2 values between 7.61%–72.10%, and standardized coefficients that are significant for each firm covariate with respect to at least one of the performance dependents, our results support previous studies indicating that firm characteristics have a significant impact on business performance (e.g., Rumelt 1991). These R^2 values rise to between 12.87%–81.71% once the industry covariates and dummy variables are included in the regressions, with standardized coefficients that are significant for each industry control variable with respect to at least two of the performance dependents. These results support prior IO research indicating that the industry in which a firm operates also affects its business performance (e.g., McGahan and Porter 1997).

The main effects results indicate that a firm's performance on one or more of the six customer feedback metrics explains variance in each of the six business performance dependents above and beyond that explained by the firm and industry control variables, with R^2 changes across the 36 regressions ranging from a low of less than 1% in TSR to almost 16% of market share. Proportionately, across all six satisfaction and loyalty metrics the increases in R^2 are greatest for the TSR and sales growth measures of business performance. However, while only one of the standardized coefficients (that for average satisfaction) is significant at the $p < 0.05$ level for the TSR dependent (though Top 2 Box satisfaction is significant at the $p = 0.054$ level), four of the six standardized coefficients are significant for the sales growth dependent. Increases in R^2 are proportionately the lowest for the gross margin and net operating cashflow dependents. Meanwhile, the standardized coefficients are significant at the $p < 0.05$ level for the greatest number of customer feedback metrics (five out of six) for the regressions in which gross margin, and market share are the dependents.

The R^2 changes when average customer satisfaction scores are introduced into the regression equations range from a low of almost 5% for net operating cash flows to almost 16% for market share, and the standardized coefficients are significant at the $p < 0.05$ level for all six of the business performance dependents. The Top 2 Box customer satisfaction metric performs similarly well, with R^2 changes ranging from a low of almost 5% for net operating cash flows to over 15% for market share, and the standardized coefficients are significant at the $p < 0.05$ level for five of the six dependents (the one exception being significant at the $p = 0.054$ level in the TSR regression). The third customer satisfaction metric, the proportion of consumers who complain, when introduced into the regression equations produces R^2 changes ranging from 4% of TSR to over 13% for market share, and the standardized coefficients are significant at the $p < 0.05$ level for four of the six dependents (with TSR and net operating cash flows being the exceptions). However, consistent with the correlations in Table 2, the proportion of customers complaining has a small but significant positive coefficient in the market share regression.

Of the customer loyalty metrics, the number of recommendations made has generally weaker predictive power than all three satisfaction metrics with R^2 changes ranging from a low of less than 1% for TSR to almost 12% for Tobin's Q, and the standardized coefficients are significant at the $p < 0.05$ level for only two of the six business performance dependents (gross margin and market share). Further, the significant standardized coefficient in the gross margin regression is negative. The net promoters metric has R^2 changes in our regressions ranging from less than 2% to almost 12%, however, its standardized coefficients are not significant at the $p < 0.05$ level in any of the six regressions. Therefore, contrary to Reichheld's (2003) assertion, the number of net promoters is not significantly associated with either firm's sales growth or gross margin performance in our regressions. Repurchase likelihood, the most commonly used attitudinal loyalty measure in practice, when introduced into the regression equations produces R^2 changes ranging from over 4% of TSR to over 15% of market share. The standardized coefficients for repurchase intention are significant at the $p < 0.05$ level for four of the six dependents (with TSR and net operating cash flows being the exceptions).

Discussion and Implications

Our findings extend existing knowledge of the relationship between customer satisfaction and business performance in two ways. First, we link customer satisfaction with previously unexplored aspects of business performance such as TSR and sales growth. The significant relationship observed between both average customer satisfaction and Top 2 Box satisfaction and subsequent sales growth performance in our regressions contradicts recent assertions that these are

Table 3 Robust Regression Standardized Estimates

	Tobin's Q dependent						Net operating cash-flow dependent					
Firm controls (R^2)	27.07%	27.07%	27.07%	27.07%	27.07%	27.07%	72.10%	72.10 %	72.10 %	72.10%	72.10%	72.10%
Number of segments	0.464 (0.000)	0.475 (0.000)	0.321 (0.001)	0.458 (0.058)	0.425 (0.000)	0.429 (0.010)	0.011 (0.994)	0.014 (0.832)	0.023 (0.678)	0.022 (0.750)	0.037 (0.815)	0.018 (0.823)
Assets (log)	0.546 (0.003)	0.547 (0.000)	0.531 (0.029)	0.645 (0.077)	0.575 (0.045)	0.608 (0.071)	0.964 (0.000)	0.956 (0.000)	0.989 (0.000)	0.933 (0.000)	0.951 (0.000)	0.763 (0.000)
Advertising intensity	0.297 (0.098)	0.290 (0.014)	0.259 (0.054)	0.405 (0.038)	0.272 (0.092)	0.445 (0.044)	−0.048 (0.001)	−0.050 (0.001)	−0.046 (0.000)	−0.044 (0.006)	−0.067 (0.001)	−0.056 (0.004)
R&D intensity	−0.374 (0.048)	−0.436 (0.001)	−0.181 (0.190)	−0.706 (0.009)	−0.410 (0.033)	−0.608 (0.033)	0.030 (0.008)	0.017 (0.004)	0.067 (0.017)	0.019 (0.000)	0.067 (0.014)	0.006 (0.000)
Industry controls (R^2)	43.00%	43.00%	43.00%	43.00%	43.00%	43.00%	81.71%	81.71%	81.71%	81.71%	81.71%	81.71%
Household income	−0.498 (0.000)	−0.488 (0.000)	−0.407 (0.000)	−0.558 (0.000)	−0.468 (0.030)	−0.350 (0.001)	−0.118 (0.018)	−0.115 (0.013)	−0.089 (0.000)	−0.089 (0.000)	−0.100 (0.000)	−0.073 (0.000)
Demand growth	0.072 (0.439)	0.070 (0.204)	0.060 (0.542)	0.151 (0.131)	0.074 (0.259)	0.114 (0.157)	−0.045 (0.165)	−0.048 (0.167)	−0.053 (0.262)	−0.050 (0.244)	−0.050 (0.200)	−0.048 (0.590)
Services	−1.044 (0.007)	−0.956 (0.000)	−0.966 (0.000)	−0.438 (0.047)	−0.989 (0.031)	−0.495 (0.036)	−0.222 (0.448)	−0.191 (0.518)	−0.206 (0.950)	−0.061 (0.270)	−0.231 (0.537)	−0.042 (0.781)
Direct	0.727 (0.042)	0.647 (0.036)	0.927 (0.000)	0.261 (0.024)	0.598 (0.007)	0.356 (0.018)	0.178 (0.060)	0.154 (0.036)	0.256 (0.153)	0.002 (0.410)	0.171 (0.664)	0.016 (0.019)
Long	0.117 (0.447)	0.125 (0.795)	0.213 (0.131)	0.312 (0.126)	0.151 (0.202)	0.243 (0.113)	−0.136 (0.000)	−0.133 (0.000)	−0.079 (0.000)	−0.163 (0.000)	−0.124 (0.000)	−0.201 (0.000)
Main effects (R^2)	51.87%	48.20%	53.62%	52.82%	54.36%	54.69%	86.38%	86.41%	86.36%	85.88%	86.31%	86.40%
Average satisfaction	0.262 (0.034)						0.104 (0.038)					
Top 2 Box satisfaction		0.187 (0.025)						0.084 (0.040)				
Complaints (prop)			−0.562 (0.000)						−0.199 (0.247)			
Net promoters (prop)				−0.105 (0.598)						−0.079 (0.556)		
Repurchase likelihood					0.183 (0.004)						0.134 (0.870)	
Number of recommendations						−0.091 (0.191)						−0.002 (0.424)

	Total shareholder return dependent						Sales growth dependent					
Firm controls (R^2)	7.61%	7.61%	7.61%	7.61%	7.61%	7.61%	8.76%	8.76%	8.76%	8.76%	8.76%	8.76%
Number of segments	−0.049 (0.923)	−0.040 (0.816)	−0.061 (0.923)	−0.059 (0.795)	−0.049 (0.973)	−0.096 (0.797)	0.183 (0.999)	0.196 (0.758)	0.125 (0.301)	0.003 (0.714)	0.073 (0.192)	0.009 (0.423)
Assets (log)	−0.039 (0.085)	−0.047 (0.107)	−0.043 (0.082)	−0.235 (0.087)	−0.035 (0.043)	−0.292 (0.072)	0.217 (0.475)	0.200 (0.370)	0.265 (0.353)	0.312 (0.473)	0.193 (0.381)	0.245 (0.664)
Advertising intensity	−0.039 (0.378)	−0.039 (0.379)	−0.001 (0.672)	−0.042 (0.589)	−0.035 (0.227)	−0.087 (0.869)	0.298 (0.249)	0.296 (0.174)	0.323 (0.202)	0.218 (0.661)	0.260 (0.127)	0.196 (0.880)
R&D intensity	0.059 (0.876)	0.056 (0.785)	0.009 (0.859)	0.160 (0.842)	0.016 (0.924)	0.179 (0.529)	−0.042 (0.023)	−0.059 (0.009)	−0.038 (0.000)	−0.037 (0.005)	−0.056 (0.058)	−0.029 (0.004)
Industry controls (R^2)	12.87%	12.87%	12.87%	12.87%	12.87%	12.87%	14.60%	14.60%	14.60%	14.60%	14.60%	14.60%
Household income	0.121 (0.675)	0.114 (0.780)	0.134 (0.326)	0.185 (0.578)	0.140 (0.312)	0.189 (0.532)	−0.071 (0.899)	−0.072 (0.490)	−0.008 (0.531)	−0.107 (0.368)	−0.034 (0.982)	−0.048 (0.798)
Demand growth	−0.048 (0.453)	−0.047 (0.464)	−0.056 (0.157)	−0.115 (0.422)	−0.057 (0.192)	−0.104 (0.529)	0.291 (0.047)	0.289 (0.069)	0.277 (0.000)	0.655 (0.004)	0.291 (0.049)	0.653 (0.007)
Services	−0.096 (0.179)	−0.088 (0.220)	−0.052 (0.086)	−0.069 (0.401)	−0.030 (0.205)	−0.058 (0.430)	−0.361 (0.089)	−0.321 (0.041)	−0.317 (0.021)	−0.440 (0.032)	−0.418 (0.007)	−0.416 (0.053)

continued

Table 3 Continued

	Total shareholder return dependent						Sales growth dependent					
Direct	0.103 (0.420)	0.117 (0.398)	−0.004 (0.477)	0.099 (0.860)	0.023 (0.328)	0.094 (0.858)	0.448 (0.122)	0.440 (0.642)	0.606 (0.206)	0.174 (0.451)	0.477 (0.310)	0.175 (0.578)
Long	−0.109 (0.589)	−0.101 (0.585)	−0.159 (0.315)	−0.268 (0.607)	−0.124 (0.790)	−0.336 (0.252)	0.537 (0.271)	0.544 (0.151)	0.669 (0.300)	0.379 (0.758)	0.570 (0.517)	0.296 (0.805)
Main effects (R^2)	18.00%	19.00%	16.89%	14.92%	17.25%	13.57%	21.86%	21.32%	21.90%	20.92%	21.80%	17.06%
Average satisfaction	0.169 (0.041)						0.189 (0.012)					
Top 2 Box satisfaction		0.188 (0.054)						0.189 (0.021)				
Complaints (prop)			0.063 (0.463)						−0.393 (0.008)			
Net promoters (prop)				−0.054 (0.819)						0.130 (0.510)		
Repurchase likelihood					0.136 (0.970)						0.314 (0.024)	
Number of recommendations						0.279 (0.088)						0.002 (0.987)
	Gross margin dependent						Market share dependent					
Firm controls (R^2)	37.06%	37.06%	37.06%	37.06%	37.06%	37.06%	37.80%	37.80%	37.80%	37.80%	37.80%	37.80%
Number of segments	0.037 (0.986)	0.031 (0.980)	0.024 (0.346)	0.010 (0.344)	0.095 (0.320)	0.048 (0.243)	0.109 (0.341)	0.121 (0.549)	0.106 (0.275)	0.087 (0.677)	0.001 (0.760)	0.025 (0.517)
Assets (log)	0.152 (0.183)	0.159 (0.212)	0.171 (0.386)	0.248 (0.454)	0.170 (0.124)	0.312 (0.124)	0.982 (0.000)	0.975 (0.000)	0.966 (0.000)	0.778 (0.000)	0.967 (0.000)	0.896 (0.000)
Advertising intensity	0.072 (0.015)	0.072 (0.020)	0.083 (0.038)	0.186 (0.062)	0.094 (0.042)	0.217 (0.085)	0.078 (0.059)	0.080 (0.065)	0.078 (0.158)	0.084 (0.055)	0.055 (0.085)	0.035 (0.132)
R&D intensity	−0.239 (0.009)	−0.238 (0.025)	−0.160 (0.005)	−0.181 (0.025)	−0.319 (0.000)	−0.228 (0.008)	−0.557 (0.000)	−0.559 (0.000)	−0.583 (0.000)	−0.642 (0.000)	−0.407 (0.000)	−0.570 (0.000)
Industry controls (R^2)	51.06%	51.06%	51.06%	51.06%	51.06%	51.06%	44.71%	44.71%	44.71%	44.71%	44.71%	44.71%
Household income	−0.130 (0.678)	−0.126 (0.484)	−0.132 (0.226)	−0.083 (0.108)	−0.137 (0.169)	−0.097 (0.104)	0.450 (0.000)	0.437 (0.000)	0.480 (0.000)	0.480 (0.000)	0.431 (0.000)	0.514 (0.000)
Demand growth	0.157 (0.099)	0.157 (0.063)	0.160 (0.010)	0.179 (0.000)	0.158 (0.011)	0.195 (0.084)	−0.057 (0.138)	−0.059 (0.181)	−0.058 (0.130)	−0.012 (0.213)	−0.057 (0.181)	−0.006 (0.106)
Services	0.445 (0.000)	0.444 (0.000)	0.356 (0.000)	0.297 (0.000)	0.531 (0.000)	0.265 (0.000)	0.335 (0.000)	0.349 (0.000)	0.351 (0.000)	0.335 (0.000)	0.251 (0.000)	0.295 (0.000)
Direct	−0.779 (0.000)	−0.793 (0.000)	−0.558 (0.000)	−0.741 (0.000)	−0.870 (0.000)	−0.644 (0.000)	−0.300 (0.000)	−0.295 (0.000)	−0.315 (0.000)	−0.241 (0.002)	−0.263 (0.000)	−0.251 (0.004)
Long	−0.557 (0.000)	−0.560 (0.000)	−0.495 (0.000)	−0.367 (0.000)	−0.579 (0.000)	−0.369 (0.000)	0.771 (0.000)	0.783 (0.000)	0.752 (0.000)	0.624 (0.000)	0.855 (0.000)	0.645 (0.000)
Main effects (R^2)	58.37%	58.54%	57.57%	52.79%	60.75%	55.29%	60.24%	59.94%	58.11%	56.63%	59.99%	55.06%
Average satisfaction	0.051 (0.000)						0.096 (0.000)					
Top 2 Box satisfaction		0.067 (0.000)						0.087 (0.000)				
Complaints (prop)			−0.181 (0.001)						0.019 (0.000)			
Net promoters (prop)				−0.063 (0.477)						0.186 (0.394)		
Repurchase likelihood					0.192 (0.000)						0.343 (0.000)	
Number of recommendations						−0.213 (0.000)						0.070 (0.041)

Note. p-values associated with each coefficient are in parentheses.

unrelated (Reichheld 2003). Our findings linking average customer satisfaction with gross margins also differ from Ittner and Larcker's (1998) study that found no relationship between these variables in a sample of a single bank's branches. In addition, in contrast to previous findings (e.g., Anderson et al. 1994, Fornell 1995) but supporting the logic of Rust and Zahorik (1993), we find a positive relationship between customer satisfaction and market share. Demonstrating the positive impact of customer satisfaction on these important aspects of firm performance considerably enhances support for the key theoretical premise that a firm's ability to satisfy its customers is an important determinant of its business performance.

Second, while researchers have examined the phenomenon of complaining behavior and its antecedents (e.g., Anderson 1998, Richins 1983, Singh 1988), ours is the first firm-level study to examine the impact of customer complaining behavior on business performance. It has been previously suggested that increasing "voice" complaints from dissatisfied customers can allow firms to better identify and manage "at risk" customers (e.g., Fornell and Wernerfelt 1988). With the exception of the significant positive relationship with market share, our findings indicate that among the firms in our data set over this time period, customer complaints have either not been "heard" by the firm or, to the extent that complaints have been received and understood by managers, recovery efforts have not been sufficient to completely mitigate the negative impact of complaining customers on subsequent business performance. Further, it has been widely suggested that customer complaints are not a good indicator of customer satisfaction (e.g., TARP 1986). However, the correlations between proportion of customers complaining and our other two customer satisfaction metrics, and the broadly similar pattern of results among all three customer satisfaction metrics in our regressions, suggest that monitoring customer complaints does provide insights into satisfaction and is valuable for predicting future business performance.

Our study also contributes new insights into the relationship between customer loyalty and business performance in two ways. First, while repurchase intentions have been widely studied at a consumer level, to the best of our knowledge ours is the first study to examine the relationship between repurchase likelihood and business performance at the firm level. Establishing this linkage is important because repurchase intentions are the most widely used indicator of customer loyalty in firms' customer feedback systems (e.g., Chandon et al. 2005). Our findings therefore provide some confidence that setting goals and monitoring performance on customers' repurchase intentions is worthwhile. Such empirical knowledge is critical to the development of effective marketing control systems that are capable of improving firms' overall business performance (Morgan et al. 2002, Rust et al. 2004b).

Second, our study is also the first to empirically report on the relationship between customer recommendation behaviors and firm performance. Customer recommendation behaviors have become an increasingly important area of study in marketing (e.g., Anderson 1998, Verhoef et al. 2002). This stems at least in part from the assumption that recommendation behavior is the consumer postpurchase phenomenon that produces the greatest benefit for supplier firms (e.g., Brown et al. 2005, Johnson and Selnes 2004). For example, Reichheld (2003, p. 48) argues that by demonstrating a consumer's willingness to make a personal sacrifice to strengthen a relationship with a supplier firm, recommendation behaviors are superior to attitudinal loyalty indicators such as repurchase intentions that may also capture "inertia, indifference, or exit barriers erected by the company or circumstance" in predicting business performance. In contrast, similar to recent findings in consumer responses to expert recommendations (Fitzsimons and Lehmann 2004), our results suggest that the business performance benefits of positive customer recommendation behaviors for a supplier assumed in much of the marketing literature may be significantly overstated.

Our findings are summarized from a managerial perspective in Table 4. These results clearly indicate that collecting customer feedback data is worthwhile in terms of predicting future business performance. It may be even more worthwhile to the extent that "what gets measured gets done" and managers use customer feedback data in their management control systems to improve their performance on customer feedback metrics. From this perspective, our results have obvious implications for which customer feedback metrics managers should use in their firms' management control systems to maximize future business performance. The three customer satisfaction metrics and the repurchase intention loyalty metric are clearly revealed in our data as having the greatest value in predicting future business performance.

However, while managers have been exhorted to enhance positive WOM recommendation intentions and behaviors, the average number of recommendations made has a significant positive impact only on future market share and a significant negative impact on future gross margins. We also find that the net promoters metric has no significant relationship with future business performance at all. Rather than being the "one number you need to grow" (Reichheld 2003), our data suggest that increasing the number of net promoters will fail to improve a firm's business

Table 4 Managerial Value of Different Customer Feedback Metrics in Predicting Future Business Performance

	Future business performance dependent					
Customer feedback metric	Tobin's Q	Net operating cash flows	Total shareholder returns	Annual sales growth	Gross margin	Market share
Average satisfaction score	High	High	High	High	High	High
Top 2 Box satisfaction score	High	High	Weak	High	High	High
Proportion of customers complaining	High	Nil	Nil	High	High	Nil
Net promoters	Nil	Nil	Nil	Nil	Nil	Nil
Average repurchase likelihood score	High	Nil	Nil	High	High	High
Average number of WOM recommendations	Nil	Nil	Nil	Nil	Nil	High

performance. Thus, our findings clearly indicate that managers should not follow recent prescriptions to abandon customer satisfaction monitoring and focus solely on net promoters as a firm's only customer feedback metric (Reichheld 2003). Rather, our results indicate the potential utility of setting goals and monitoring performance on a customer feedback "scorecard" that includes average customer satisfaction, Top 2 Box satisfaction, proportion of customers complaining, and repurchase intent.

Limitations and Future Research

Our data set suffers from a number of limitations. First, while the ACSI is representative of the U.S. economy in terms of industry coverage (e.g., Fornell 1992, Fornell et al. 1996), it only contains data from large companies with consumer end-user customers. Thus, while our findings may be somewhat generalizable across industries, they are not necessarily generalizable to smaller firms or firms whose end-user customers are businesses. Second, while we include a number of different industry covariates in our regressions, it is not possible in our analyses to completely control for differences between industries. For example, we are only able to capture differences in the level of competition between industries and cannot account for different types of competitive interactions that may vary across industries. This may be important since Oliver (1999) suggests that preconditions to achieve customer loyalty may differ across categories and industries, impacting the relative predictive power of customer satisfaction and loyalty metrics. Third, customer relationship management (CRM) theorists suggest that firms should focus their attention on their most profitable customers (e.g., Rust et al. 2004a). We have no data on how important each individual consumer surveyed by the ACSI may be to each firm in our database and therefore treat all customers as equally important in our analyses.

We also limited our analyses to the key question of identifying which customer feedback metrics are the most valuable to managers in predicting business performance. We therefore focused on customer feedback metrics that are simple to comprehend and communicate, and only examined relationships that are likely to be easily understood by managers and employees (e.g., Ittner and Larcker 2003, Reichheld 2003). As a result, we examine only linear relationships between customer feedback metrics and business performance and do not explore possible interactions between the different customer feedback metrics. Future research exploring interactions between customer feedback measures and examining possible nonlinear relationships with firms' business performance may provide further insights for marketing theory.

Our study also suggests a number of other interesting avenues for future research. Our regression results indicate that customer satisfaction is more directly related to firm performance than recommendation behavior indicators of loyalty. With respect to economic and accounting indicators of firm performance, one possible explanation for this may be that the physical asset requirements and financial costs to the firm to generate positive WOM recommendation behaviors among consumers are significantly higher than those required to satisfy consumers (e.g., Dowling and Uncles 1997). This may explain the negative relationships between net promoters and Tobin's Q and between number of recommendations and firms' gross margin performance observed in our data. Additional research into the asset requirements and financial costs of creating positive WOM and other forms of behavioral loyalty is obviously required.

For the market-based measures of business performance (sales growth and market share), our results indicate that promoters are not themselves subsequently buying significantly more and/or that they may not influence potential new customers as strongly as has been previously believed. One possible explanation is that the process of getting consumers sufficiently involved with a company or brand to engage in positive WOM may also paradoxically

increase their involvement in the category and desire for variety in future purchases. Another possibility is that consumers who engage in positive WOM actively seek to be opinion leaders and therefore gain utility through variety seeking. Our results therefore indicate a need for additional consumer-level research into the impact of recommendation behaviors on self and others' purchase behaviors. From a firm-level perspective, meanwhile, given that our recommendation behavior data is a self-reported indicator of passive loyalty (Oliver 1999), future research should also examine whether more active repurchase behavior indicators of loyalty (e.g., share of wallet) perform better relative to attitudinal indicators of satisfaction and loyalty as predictors of future business performance.

The relatively weak and/or insignificant correlations between recommendation behaviors and the two attitudinal customer satisfaction metrics in our data are consistent with previous studies (e.g., Anderson 1998). However, the absence of a significant positive correlation between repurchase intent and net promoters and the significant negative correlation between repurchase intent and number of recommendations is at odds with the intuitive logic of "service-profit chain" models. Given the ubiquity of the service-profit chain logic in CRM models and theory frameworks linking marketing activities with business performance, the linkages between consumer recommendation behaviors and other indicators of loyalty from both a consumer and a firm-level perspective obviously require additional empirical research attention. One potentially interesting avenue to explore is suggested by the significant positive correlation between number of recommendations and the proportion of customers complaining in our data. Because both variables are "voice" related (e.g., Hirschman 1970), this may indicate that there are characteristics of voice-prone consumers that are unrelated to the direction (i.e., complaint versus recommendation) of the voice action. This suggests a need for research to better understand the extent to which WOM behaviors, both negative and positive, are driven by consumer characteristics versus firms' marketing actions.

Conclusions

Our study is the first to examine the value of various widely advocated and commonly computed customer satisfaction and loyalty metrics used by managers in goal setting and performance monitoring in predicting firms' future business performance. Our results indicate that customer feedback metrics are valuable in predicting firms' business performance. The customer satisfaction metrics of average customer satisfaction, Top 2 Box customer satisfaction scores, and proportion of customers complaining, and the repurchase likelihood loyalty metric seem to be particularly valuable in this regard. In contrast, two widely advocated loyalty metrics using recommendation behavior data, net promoters, and number of recommendations made have little or no predictive value. Our results provide new empirical insights into the relationship between customer satisfaction and loyalty and business performance, and indicate that recent prescriptions that managers should abandon customer satisfaction monitoring and focus solely on customer recommendation metrics are misguided and potentially harmful.

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References

Ambler, Tim. 2003. *Marketing and the Bottom Line*, 2nd ed. Financial Times/Prentice Hall, London, UK.

Anderson, Eugene W. 1998. Customer satisfaction and word of mouth. *J. Service Res.* **1**(1) 5–17.

Anderson, Eugene W., Claes Fornell, Donald R. Lehmann. 1994. Customer satisfaction, market share, and profitability. *J. Marketing* **58**(3) 53–66.

Anderson, Eugene W., Claes Fornell, S. Mazvancheryl. 2004. Customer satisfaction and shareholder value. *J. Marketing* **68**(4) 172–185.

Anderson, Eugene W., Claes Fornell, Roland T. Rust. 1997. Customer satisfaction, productivity, and profitability: Differences between goods and services. *Marketing Sci.* **16**(2) 129–145.

Boulding, William, Richard Staelin. 1995. Identifying generalizable effects of strategic actions on firm performance: The case of demand-side returns to R&D spending. *Marketing Sci.* **14**(3) 222–234.

Brown, T. J., T. E. Barry, P. A. Dacin, R. F. Gunst. 2005. Spreading the word: Antecedents of consumers' positive word-of-mouth intentions and behaviors in a retailing context. *J. Acad. Marketing Sci.* **33**(2) 123–138.

Chandon, P., V. G. Morwitz, W. J. Reinartz. 2005. Do intentions really predict behavior? Self generated validity effects in survey research. *J. Marketing* **69**(2) 1–14.

Chung, K. H., S. W. Pruitt. 1994. A simple approximation of Tobin's Q. *Financial Management* (Autumn) 70–74.

Curry, B., K. D. George. 1983. Industrial concentration: A survey. *J. Indust. Econom.* **31**(3) 203–255.

Day, George S. 1994. The capabilities of market driven organizations. *J. Marketing* **58**(4) 37–52.

Dechow, P. M., S. P. Kothari, R. L. Watts. 1998. The relation between earnings and cash flows. *J. Accounting Econom.* **25**(2) 133–168.

Dowling, Grahame R., Mark Uncles. 1997. Do customer loyalty programs really work? *Sloan Management Rev.* **38**(Summer) 71–82.

Erickson, Gary, Robert Jacobson. 1992. Gaining comparative advantage through discretionary expenditures: The returns to R&D and advertising. *Management Sci.* **38**(September) 1264–1279.

Finkelstein, Sydney, Brian K. Boyd. 1998. How much does the CEO matter? The role of managerial discretion in the setting of CEO compensation. *Acad. Management J.* **41** 179–199.

Fitzsimons, Gavan J., Donald R. Lehmann. 2004. Reactance to recommendations: When unsolicited advice yields contrary responses. *Marketing Sci.* **23**(1) 82–94.

Fornell, Claes. 1992. A national customer satisfaction barometer: The Swedish experience. *J. Marketing* **56**(1) 6–21.

Fornell, Claes. 1995. The quality of economic output: Empirical generalizations about its distribution and relationship to market share. *Marketing Sci.* **14**(3) G203–G211.

Fornell, Claes, Birger Wernerfelt. 1988. A model for customer complaint management. *Marketing Sci.* **7**(3) 287–298.

Fornell, Claes, M. D. Johnson, E. W. Anderson, J. Cha, B. Bryant. 1996. The American Customer Satisfaction Index: Description, findings, and implications. *J. Marketing* **60**(4) 7–18.

Greene, William H. 2003. *Econometric Analysis*, 5th ed. Prentice Hall, Englewood Cliffs, NJ.

Greve, Henrich R. 2003. *Organizational Learning from Performance Feedback*. Cambridge University Press, Cambridge, UK.

Griffin, Abbie, John R. Hauser. 1993. The voice of the customer. *Marketing Sci.* **12**(Winter) 1–27.

Griffin, Abbie, Greg Gleason, Rick Preiss, Dave Shevenaugh. 1995. Best practice for customer satisfaction in manufacturing firms. *Sloan Management Rev.* (Winter) 87–98.

Gruca, Thomas S., Lopo L. Rego. 2005. Customer satisfaction, cash flow, and shareholder value. *J. Marketing* **69**(3) 115–130.

Hauser, John, Gerald Katz. 1998. You are what you measure! *Eur. Management J.* **16**(5) 516–528.

Hauser, John, Duncan I. Simester, Birger Wernerfelt. 1994. Customer satisfaction incentives. *Marketing Sci.* **13**(4) 327–350.

Hayward, Mathew L. 2003. Professional influence: The effects of investment banks on clients' acquisition financing and performance. *Strategic Management J.* **24**(9) 783–801.

Hirschman, Alfred O. 1970. *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States*. Harvard University Press, Cambridge, MA.

Huber, P. J. 1973. Robust regression: Asymptotics, conjectures and Monte Carlo. *Ann. Statist.* **1** 799–821.

Ittner, Christopher, David Larcker. 1998. Are nonfinancial measures leading indicators of financial performance? An analysis of customer satisfaction. *J. Accounting Res.* **36**(1) 1–35.

Ittner, Christopher, David Larcker. 2003. Coming up short on nonfinancial performance measurement. *Harvard Bus. Rev.* (November) 88–95.

Johnson, Michael D., Fred Selnes. 2004. Customer portfolio management: Towards a dynamic theory of exchange relationships. *J. Marketing* **64**(2) 1–17.

Kamakura, Wagner, Vikas Mittal, Fernando de Rosa, Jose Mazzon. 2002. Assessing the service-profit chain. *Marketing Sci.* **21**(3) 294–317.

Kaplan, Robert S., David P. Norton. 1996. *The Balanced Scorecard*. Harvard Business School Press, Cambridge, MA.

Kennedy, Peter. 2003. *A Guide to Econometrics*, 5th ed. MIT Press, Cambridge, MA.

Lewellen, G. Wilbur, S. G. Badrinath. 1997. On the measurement of Tobin's Q. *J. Financial Econom.* **44** 77–122.

McGahan, A. M., Michael E. Porter. 1997. How much does industry matter, really? *Strategic Management J.* **18** 15–30.

Mittal, Vikas, William T. Ross, Patrick M. Baldasare. 1998. The asymmetric impact of negative and positive attribute-level performance on overall satisfaction and repurchase intentions. *J. Marketing* **62**(1) 33–47.

Montgomery, Cynthia A., Birger Wernerfelt. 1991. Sources of superior performance: Market share versus industry effects in the US brewing industry. *Management Sci.* **37**(8) 954–959.

Morgan, Neil A., Eugene W. Anderson, Vikas Mittal. 2005. Understanding firms' customer satisfaction information usage. *J. Marketing* **69**(3) 131–151.

Morgan, Neil A., Bruce H. Clark, Richard Gooner. 2002. Marketing productivity, marketing audits, and systems for marketing performance assessment: Integrating multiple perspectives. *J. Bus. Res.* **55**(5) 363–375.

Myers, James H. 1999. *Measuring Customer Satisfaction: Hot Buttons and Other Measurement Issues*. AMA, Chicago, IL.

NQRC. 1994. *American Customer Satisfaction Index: Methodology Report*. National Quality Research Center, University of Michigan Business School, Ann Arbor, MI.

Neill, J. D., T. F. Schaefer, P. R. Bahnson, M. E. Bradbury. 1991. The usefulness of cash flow data: A review and synthesis. *J. Accounting Literature* **10** 117–150.

Oliver, Richard L. 1999. Whence consumer loyalty? *J. Marketing* **63**(Special Issue) 33–44.

Ramsey, J. B. 1969. Tests for specification error in classical linear least squares regression analysis. *J. Roy. Statist. Soc. Ser. B* (31) 350–371.

Rao, V., M. K. Agarwal, D. Dahlhoff. 2004. How is manifest branding strategy related to the intangible value of a corporation? *J. Marketing* **84**(4) 126–141.

Reichheld, Fredrick E. 1996. *The Loyalty Effect: The Hidden Force Behind Growth, Profits, and Lasting Value*. Harvard Business School Press, Boston, MA.

Reichheld, Fredrick E. 2003. The one number you need to grow. *Harvard Bus. Rev.* (December) 46–54.

Richins, Marsha L. 1983. Negative word-of-mouth by dissatisfied consumers: A pilot study. *J. Marketing* **47**(4) 68–78.

Rumelt, Richard P. 1991. How much does industry matter? *Strategic Management J.* **12**(3) 167–185.

Rust, Roland T., Anthony J. Zahorik. 1993. Customer satisfaction, customer retention, and market share. *J. Retailing* **69**(2) 193–215.

Rust, Roland T., Katherine N. Lemon, Valarie A. Zeithaml. 2004a. Return on marketing: Using customer equity to focus marketing strategy. *J. Marketing* **68**(1) 109–127.

Rust, Roland T., T. Ambler, G. S. Carpenter, V. Kumar, R. K. Srivastava. 2004b. Measuring marketing productivity: Current knowledge and future directions. *J. Marketing* **68**(4) 76–89.

Shugan, Steven M. 2005. Brand loyalty programs: Are they shams? *Marketing Sci.* **24**(2) 185–193.

Singh, Jagdip. 1988. Consumer complaint intentions and behavior: Definitional and taxonomical issues. *J. Marketing* **52**(1) 93–107.

Sloan, Richard G. 1996. Do stock prices fully reflect information in accruals and cash flows about future earnings? *The Accounting Rev.* **71**(3) 289–315.

TARP. 1986. *Consumer Complaint Handling in America: An Update Study*. Technical Assistance Research Programs, White House Office of Consumer Affairs, Washington, D.C.

Tatikonda, Mohan V., M. Montoya-Weiss. 2001. Integrating operations and marketing perspectives of product innovation: The influence of organizational process factors and capabilities on development performance. *Management Sci.* **47**(1) 151–172.

Tirole, J. 1997. *The Theory of Industrial Organization*. MIT Press, Cambridge, MA.

Tobin, J. 1969. A general equilibrium approach to monetary theory. *J. Money, Credit Banking* **1**(1) 15–29.

Verhoef, P. C., P. H. Franses, J. C. Hoekstra. 2002. The effect of relational constructs on customer referrals and number of services purchased from a multiservice provider: Does age of relationship matter? *J. Acad. Marketing Sci.* **30**(Summer) 202–216.

Vorhies, Douglas W., Neil A. Morgan. 2003. A configuration theory assessment of marketing organization fit with business strategy and its relationship with marketing performance. *J. Marketing* **67**(1) 100–115.

Wallman, S. M. H. 1995. The future of accounting and disclosure in an evolving world: The need for dramatic change. *Accounting Horizons* (September) 81–91.

Westbrook, R. A. 2000. Towards a managerial research agenda for customer satisfaction. *J. Consumer Satisfaction, Dissatisfaction Complaining Behav.* **13** 17–25.