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The Competitive Causes and Consequences of Customer Satisfaction

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Daniel H. Simon
Department of Applied Economics and Management
Cornell University
354 Warren Hall
Ithaca, NY 14853
Phone: (607) 255-1626
Email: dhs29@cornell.edu

Miguel I. Gómez
Department of Applied Economics and Management
Cornell University
149 Warren Hall
Ithaca, NY 14853
Phone: (607) 255-8472
E-mail: mig7@cornell.edu

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ABSTRACT

We conduct two studies to test three hypotheses: (1) Competition increases a firm's customer satisfaction; (2) Rivals' customer satisfaction increases a firm's customer satisfaction; (3) Rivals' customer satisfaction reduces a firm's sales. First, we use store-level customer satisfaction data from a supermarket chain. Next, we consider a range of industries, using brand-level customer satisfaction ratings from the American Customer Satisfaction Index. Results from both studies provide support for the latter two hypotheses, while we only find support for the first hypothesis in the second study.

Satisfying customers is critical to a firm's success. Firms that cannot satisfy their customers are likely to lose market share to rivals who offer better service and products at lower prices. Fornell (2001) posits that "satisfied customers may be the most consequential of all economic assets; indeed, they may be proxies for all other economic assets combined" (120). More broadly, customers are a key stakeholder group that affects the firm's legitimacy and long-term survival (Post, Preston, & Sachs, 2002).

Despite its strategic importance, the role of customers and their level of satisfaction has received little attention in the strategy literature. While researchers have examined the organizational determinants of customer satisfaction (Schneider, White, & Paul, 1998), there has been little attention to the role of competition (Liao & Chuang, 2004). Similarly, while researchers have found a positive relationship between a firm's own customer satisfaction and its performance (Capon, Farley, & Hoeni, 1990), there has been little effort to examine the impact of rivals' customer satisfaction. As a consequence, we know very little about how firms' competitive interaction affects customer satisfaction and firm performance.

Although strategy researchers have not directly examined the role of customer satisfaction, they have examined the link between competitive interaction and performance. In particular, researchers in the competitive dynamics area have examined the links between firms' competitive actions (Chen, Smith, & Grimm, 1991; Chen & Miller, 1994), and between firms' actions and performance (Ferrier, Smith, & Grimm, 1999; Young, Smith, & Grimm, 1996). We extend the competitive dynamics literature by developing theory concerning the extent to which rivals affect a firm's customer satisfaction. In doing so, we examine "the nature and consequences of the competitive dynamics among firms", which "is a key objective of the strategic management field" (Ketchen, Snow, & Hoover, 2004: 779).

Thus, this paper contributes by developing and testing theory concerning the competitive antecedents and effects of customer satisfaction. More specifically, we develop and test three hypotheses: (1) The amount of competition that a firm faces positively affects its level of customer satisfaction; (2) Rivals' customer satisfaction positively affects a firm's customer satisfaction; (3) Rivals' customer satisfaction negatively affects a firm's sales.

We test these hypotheses in two separate studies. In Study One, we use store-level customer satisfaction data from a chain of grocery stores. These data are unique because they include customer satisfaction ratings for all grocery stores (stores owned by the focal firm and by its rivals) in a local area. They allow us to examine the links between competition and customer satisfaction in detail. In Study Two, we extend our analysis to a wide range of industries using brand-level customer ratings from the American Customer Satisfaction Index (ACSI). The ACSI measures customer satisfaction annually for more than 200 brands. While less detailed, these data allow us to generalize results from Study One.

By linking competition with customer satisfaction, this study offers three main theoretical contributions. First, it extends the structure-conduct-performance (SCP) perspective to cover a broader set of firm behaviors. While previous research has linked industry structure with firms' pricing behavior, little research has linked industry structure with the broader construct of customer satisfaction or with specific dimensions of customer satisfaction. Extending the SCP perspective to a firm's customer satisfaction is important because customer satisfaction comprises a much larger set of activities than just pricing. We posit that a firm's customer satisfaction is a function of three factors: product quality, customer service, and prices. By linking market structure and customer satisfaction, we substantially increase the scope of activities that are influenced by industry structure. Moreover, we empirically examine the effect of competition on overall customer satisfaction, and on each of the three components of customer satisfaction: quality service, and price. In this way, we can assess which aspects of customer satisfaction are most influenced by competition.

Second, we extend the competitive dynamics perspective to the realm of customer satisfaction, linking customer satisfaction with competitive strategy. This paper is the first to examine the competitive dynamics among firms competing on various dimensions of customer satisfaction. We assess the extent to which firms respond to changes in rivals' satisfaction, looking both at overall customer satisfaction, as well as the three key components of customer satisfaction: quality, service, and price. In doing so, we improve our understanding of how firms compete for customers. In addition, by focusing on the competitive dynamics of customer satisfaction, our paper emphasizes that customer satisfaction is not

only an outcome variable, but it is also a strategic weapon that firms can influence in the battle for competitive supremacy. This is important for strategy researchers, as it suggests that customer satisfaction may provide a useful proxy for certain kinds of firm behavior.

Third, we posit that rival customer satisfaction affects firm sales directly and indirectly. While increases in rivals' customer satisfaction are expected to reduce a firm's sales, these increases in rival satisfaction may have an indirect positive effect on firm sales by influencing the firm's own provision of customer satisfaction. Therefore, the overall effect of rivals' customer satisfaction on a firm's sales is ambiguous. By considering both the direct and indirect effects of rivals' customer satisfaction, this study enhances our understanding of the competitive consequences of customer satisfaction.

Beyond the theoretical contributions, this study also offers empirical contributions. In particular, nearly all studies linking competition and customer satisfaction have been conducted in the service sector. By examining the impact of competition on customer satisfaction in the grocery store business we test our hypotheses in a new setting. Moreover, by conducting a second study using a broad sample of consumer goods and services, we are able to examine the generalizability of the relationships between competition and customer satisfaction. In addition, this paper is the first to examine the links between competition and customer satisfaction by considering multiple dimensions of customer satisfaction. This yields a more detailed understanding of how competition affects customer satisfaction.

The rest of the paper proceeds as follows. In the following section we explain how competition affects the provision of customer satisfaction and we describe how rivals' customer satisfaction impacts a firm's sales. We review extant theoretical and empirical research linking competition and customer satisfaction and we state our hypotheses. In the third section, we describe the data, methods, and results for Study One. We then do the same for Study Two. Finally, we discuss our findings, including limitations and future research opportunities.

LITERATURE REVIEW AND HYPOTHESES

The Impact of Competition on Customer Satisfaction

While a long literature in industrial organization (IO) economics has focused on the impact of competition, in the form of market structure, on prices, very few studies have examined how competition affects firms' overall customer satisfaction or non-price dimensions of customer satisfaction. At the same time, research in strategy has examined the influence of rivals' behavior on a firm's behavior, focusing on competitive attacks and responses. However, like in the IO literature, little if any competitive dynamics research has examined the effect of rivals' actions on non-price dimensions of customer satisfaction.

Extending these two perspectives, we posit that competition may affect a firm's provision of customer satisfaction in two different ways. First, market structure may influence a firm's provision of customer satisfaction. Second, rivals' level of customer satisfaction may impact a firm's own level of customer satisfaction. We discuss each of these effects below.

Market Structure and Customer Satisfaction

The most studied question in IO economics examines how market structure affects prices (Bresnahan, 1989). Just as market structure may influence a firm's pricing behavior, it may also affect a firm's provision of customer satisfaction. When customers have more choices, firms have an incentive to improve customer satisfaction by offering higher-quality goods, better service, and lower prices in order to maintain their market share (Mazzeo, 2003). Moreover, this incentive to satisfy customers is enhanced because the cost of attracting new customers is higher in markets with more rivals (Estelami, 2000).

Most empirical tests of the impact of competition on non-price dimensions of customer satisfaction have focused on various measures of service quality in the service sector. Reviewing the evidence on the impact of competition on quality in hospitals, Dranove and White (1994) find limited evidence that competition impacts quality in the healthcare industry, although difficulties in measuring quality make inference difficult. Domberger and Scherr (1989) study the same relationship in the market for legal services and find that competition is positively correlated with quality. Using arrival delays as a measure of service quality, Mazzeo (2003) examines the impact of market structure on arrival delays in the airline industry. He finds that on-time performance on monopoly routes is not as good as on routes served by two or more airlines (Mazzeo, 2003), providing evidence that competition spurs service quality.

Finally, Cohen and Mazzeo (2004) use number of local branches as a measure of service quality to test the relationship between market structure and branching decisions in the banking industry. They find that while entry by multimarket banks has a positive effect on branching by incumbent banks, entry by single-market banks has a negative effect on branching activity.

Only two studies have linked market structure with direct measures of customer satisfaction. Fornell and Robinson (1983) use customer surveys of dissatisfaction with price and quality. They find that market concentration has no impact on the average number of customers who report problems with either the price or the quality of a good or service they consumed. In an ancillary analysis, Liao and Chuang (2004) examine the impact of local competition on customer satisfaction ratings in the fast food industry. They find that the number of rivals in the local market has a positive effect on customer ratings of overall satisfaction, customer service, and loyalty (Liao and Chuang, 2004).

Together, these studies provide some evidence that competition positively affects customer satisfaction. However, the results are far from conclusive. Moreover, most of these studies use indirect measures of customer satisfaction, and none of the studies examine multiple dimensions of customer satisfaction. Furthermore, these studies only consider particular service industries; the links between market structure and customer satisfaction have not been examined in a multi-industry setting. Building on these studies as well as on the theoretical link between market structure and customer satisfaction, we offer the following hypothesis:

H1: Competition has a positive impact on customer satisfaction.

In our empirical analysis we extend prior research by examining the impact of competition on overall customer satisfaction, as well as on three dimensions of customer satisfaction: quality, service, and price.

The Impact of Rivals' Satisfaction on a Firm's Own Customer Satisfaction

While a few studies have addressed the link between market structure and firms' customer satisfaction, little, if any research has examined the impact of rivals' conduct on firms' customer satisfaction. In particular, the literature has not considered the link between a firm's customer satisfaction

and its rivals' customer satisfaction. Drawing on the competitive dynamics literature, we argue that not only does market structure affect a firm's provision of customer satisfaction, but so do the actions that rivals take to influence their own customer satisfaction.

The competitive dynamics literature focuses on the actions that firms take in order to gain a competitive advantage. Researchers in this area have examined how the speed and the frequency of competitive actions that a firm takes influence its performance (Ferrier, Smith, & Grimm, 1999; Young, Smith, & Grimm, 1996), and how the speed and frequency of rivals' competitive actions influence a firm's performance (Ferrier, Smith, & Grimm, 1999; Young, Smith, & Grimm, 1996). Similarly, researchers have examined how the types of competitive actions that firms take influence the likelihood and speed of response (Chen, Smith, & Grimm, 1991; Chen & Miller, 1994). They have also examined how the degree to which firms overlap in the markets in which they compete influences their competitive activity, including their entry and exit behavior (Chen, 1996; Baum & Korn, 1996).

One of the main ideas in the competitive dynamics literature is that rival actions create incentives for firms to respond in order to maintain their competitive position (Chen & Miller, 1994). We extend this idea to the realm of customer satisfaction and argue that when rivals take actions aimed at increasing customers' satisfaction, a firm has incentives to respond by improving its own level of customer satisfaction. For example, if one supermarket hires more cashiers to provide speedier check out service, rival supermarkets in the same area may take steps to improve their own service levels as well. Generally, if rivals improve their customer satisfaction, a firm is likely to respond with actions to improve its own customer satisfaction in an effort to defend its market share.

In our studies we do not observe firms' actions directly. However, we posit that customer satisfaction ratings provide a measure of firms' efforts to improve their customer satisfaction. Building on this idea and on the competitive dynamics perspective, we hypothesize:

H2: Rivals' customer satisfaction has a positive effect on a firm's own customer satisfaction.

Moreover, to better assess competitive attacks and responses, we empirically consider the relationship between own and rival customer satisfaction on each of the three dimensions of customer satisfaction: quality, service, and price.

Customer Satisfaction and Firm Performance

Several studies in the marketing literature have considered the relationship between customer satisfaction and performance at the firm level. Not surprisingly, the results generally show that customer satisfaction provides economic benefits to the firm. For example, customer satisfaction has been linked to increased revenues (Fornell, 1992; Gómez, McLaughlin & Wittink, 2004; Rust, Zahorik, & Keiningham, 1995), more inelastic demand (Anderson, 1996), and reduced costs for attracting new customers and other costs associated with poor quality, defects and complaints (Anderson, Fornell, & Rust, 1997). Reflecting these benefits, customer satisfaction has been found to positively affect a firm's profitability (Anderson, Fornell, & Lehmann, 1994; Aaker & Jacobson, 1994; Capon, Farley, & Hoeni, 1990), and its market value (Aaker & Jacobson, 1994; Ittner & Larcker, 1998).

While extant literature provides evidence for the positive effect of a firm's customer satisfaction, little if any research has considered the effect of rivals' customer satisfaction on a firm's performance. Yet, a firm's performance, particularly its revenues, may also be impacted by rivals' customer satisfaction. As rivals offer higher quality, better service, and/or lower prices, customers are likely to switch to those firms. These customers' perception of the focal firm's offerings may remain unchanged. However, if their perceptions of a rival(s)'s quality, service, and/or price improve (they recognize an opportunity to get a better product or service at the same or lower price), then they are likely to seize it.

In this spirit, Januszewski (2004) studies the impact of airline on-time performance on demand for air travel. She shows that while an airline's on-time performance increases its demand, rivals' on-time performance reduces its demand, holding constant its own level of on-time performance. We further examine this relationship, considering overall customer satisfaction as well as each dimension of customer satisfaction, with the following hypothesis:

H3: Rivals' customer satisfaction has a negative effect on a firm's sales performance.

To test our hypotheses, we conduct two separate studies. Study One uses a single-industry, store-level dataset of customer satisfaction ratings, while Study Two uses a multi-industry dataset of brand-level customer satisfaction ratings. Using customer satisfaction ratings to measure firms' provision of customer satisfaction offers many benefits while creating some challenges. The advantage of customer satisfaction ratings is that they allow us to measure customers' perceptions, which should ultimately drive purchase decisions. However, customer satisfaction ratings are a somewhat noisy measure of the actions a firm takes to satisfy customers for two reasons. First, customers may rate rival stores on a relative basis; a customer's satisfaction with firm i may be a function of her satisfaction with rivals of firm i . As a result, customers may lower their satisfaction ratings for firm i as their satisfaction with rival firms increases. Second, unobserved factors may cause firms' customer satisfaction to vary even if they take no actions. For example, during good economic times customers may be more satisfied even if quality, service, and prices do not change. We further discuss each of these issues below and explain how we control for them.

STUDY ONE

Data

In this study we use data from a major supermarket firm operating in the Eastern US. The dataset includes observations for 189 stores located in two states, spanning the years 1998-2002. Customer satisfaction data are collected annually in each store's trading area via random phone interviews conducted by an independent market research firm during a one-week period.¹ On average, about 200 households are interviewed in each trading area each year. A trading area is defined as the census tract in which a store is located, and there is only one focal store per trading area (according to the US Census Bureau, on average, about 4000 people live in a census tract). Respondents provide information for up to five grocery stores with which they are familiar. Respondents rate each store on a 1 (poor) - 5 (excellent) scale on 15 items related to customer satisfaction with specific aspects of the store and one item

¹ In 2002, the supermarket chain converted the customer satisfaction data collection to a daily basis. Interviewers conducted roughly one survey per day per store until they had surveyed about 200 respondents per store.

measuring overall satisfaction (Appendix A). They also indicate their most convenient store, and they provide demographic characteristics such as household size, gender and age, among others.

In the customer satisfaction survey, the interviewers do not reveal the name of the grocery store chain for which they are conducting the survey. Customers rate up to five grocery stores with which they are familiar. This feature of the survey allows us to capture data on rivals' satisfaction. Moreover, the blind nature of the survey increases the credibility of customer responses, because customers feel no pressure to provide higher ratings for any particular store. Not all respondents rate the focal store (the store in the trading area owned by the chain that provided the data). On average, they rate three stores.

Using these data, we construct customer satisfaction measures for the focal store and for rivals. The focal store's customer satisfaction is based on the average ratings of respondents in the focal trading area who rate the focal store, while rivals' customer satisfaction is based on respondents' average ratings for all stores in the trading area other than the focal store.

In addition to the customer satisfaction data, we collected data on focal store sales performance and on store characteristics. For each focal store in our sample, we obtained monthly sales for the entire period of the study. From an annual employee survey and from various company reports we obtained information regarding labor-force variables at the store level such as number of employees, full or part-time status, and employee turnover rate. Additionally, we collected data on store remodels during the study period. We believe that the collection and integration of these data represent an important contribution of our work because they allow us to link customer satisfaction and firm performance in a competitive setting while controlling for the influence of customer and store characteristics.

Variables

Customer Satisfaction of Focal Store. To measure a focal store's overall customer satisfaction, we use its customers' average responses to the overall satisfaction survey item (item 16 in Appendix A). For example, for focal store i , overall customer satisfaction is the average response to the overall satisfaction item by respondents that rated focal store i .

We also measure the three dimensions of customer satisfaction: quality, service, and price. Nine survey items describe the store's quality in the following areas: bakery, seafood, fruits and vegetables, fresh meats, deli meats and salads, dairy, community involvement, availability of brands, and store cleanliness. Three items capture service: fast check-out, helpfulness of employees, and quality of service in the deli. Finally, three items measure satisfaction with prices: low everyday prices, great discounts, and availability of advertised items (see Table 1 for a list of the items used to measure each dimension of customer satisfaction). The reliability alphas indicate that the survey measures the three dimensions of customer satisfaction in a useful way (0.87, 0.94, and 0.75 for service, quality and price, respectively).

[Insert Table 1 about here]

To measure each dimension at the store level, we take the store's average rating across the items corresponding to that dimension. For example, to measure satisfaction with service for focal store i , we first calculate the average rating for store i , for each of the three service-related items: extremely helpful employees, fast check out service, and excellent service in the deli. Next, we calculate store i 's satisfaction with service by taking the average of the store's averages for each of the three service-related items. Mathematically, if X_{i1}, \dots, X_{i3} are store i 's averages for the three service-related items, satisfaction with service for store i equals $(X_{i1} + X_{i2} + X_{i3})/3$. We do the same for quality and for price.

Rivals' Customer Satisfaction. We use a similar approach to measure rival customer satisfaction. Rivals' overall customer satisfaction is the average response to the overall satisfaction item given by respondents rating all stores, other than the focal store, in a focal store's trading area. For example, for focal store i in trading area j , rival overall customer satisfaction is the average response to the overall satisfaction item for all stores, other than store i , rated by customers in trading area j . Similarly, we create measures of rival satisfaction with service, quality, and price by taking the average rating for rivals on the three service-related items, the nine quality-related items, and the three price-related items.

Market Structure. To measure market structure, we count the number of stores, other than focal store i , rated by customers in trading area j . Using customer responses is effective in eliciting the relevant rivals for each store, avoiding any arbitrary construction of market boundaries.

Sales Performance. We measure the focal store's sales during the one-year period following the month in which the customer satisfaction survey was administered. For example, if the customer satisfaction survey is conducted in March, then we compute sales by adding up thirteen four-week periods of sales, beginning with April, and continuing through March of the following year.²

Control Variables. We control for the age, income, number of children, and marital status of respondents. We also control for the store's number of employees, the percentage of employees that are full-time, and the store's annual employee turnover rate. Additionally, we include a dummy variable indicating whether the store is being remodeled. Lastly, we include store and year fixed effects. Store fixed effects control for differences across stores that might influence competitive conditions, customer satisfaction, and/or sales, while year fixed effects control for changes over time that affect these variables.

Results

The dataset includes 578 focal store-year observations. Table 2 reports descriptive statistics and a correlation matrix for the key variables. Mean focal store sales are about \$36 million. Moreover, the focal chain has higher ratings than its rivals on overall satisfaction, as well as on satisfaction with quality, but its scores are about the same as rivals' on ratings of service and price. This suggests that the focal chain tends to emphasize quality in its strategy.³ On average, each focal store has about seven rivals.

[Insert Table 2 about here]

Table 3 reports the results for the tests of H1. In the first column, we examine the impact of market structure on overall customer satisfaction. Our results suggest that the number of rival stores has no impact on a store's overall level of customer satisfaction. We find similar results when we examine the impact of market structure on each of the three dimensions of customer satisfaction (quality, service, and

² As noted above, in 2002 the supermarket chain converted the customer satisfaction data collection to a daily basis. To keep the timing of our sales data consistent with previous years, we use those surveys that were conducted prior to the month in which the survey was conducted during the previous year. For example, prior to 2002 Division 1 stores conducted the customer satisfaction survey during September. Therefore, in 2002, we use customer satisfaction ratings data that were collected between January and September. As a result the period in which we measure sales remains constant in each year, and we avoid seasonal inconsistencies in our sales measure.

³ Conversations with company executives and industry experts indicate that the focal chain's strategy emphasizes quality, although in many markets it is not the highest-quality store. However, the focal store is very rarely the lowest-priced supermarket in a local area.

price). These results provide no support for H1, indicating that the number of rival stores does not affect a store's level of customer satisfaction.

[Insert Table 3 about here]

To test Hypothesis 2, we add rival satisfaction to our model. We report the results in Table 4. In column 1, we consider the impact of rivals' overall customer satisfaction on the focal store's overall customer satisfaction. We find that rivals' overall satisfaction has no effect on a store's overall level of customer satisfaction. This result fails to provide support for H2 which posits that by increasing the store's incentive to respond, rival satisfaction should positively affect a store's own level of satisfaction.

[Insert Table 4 about here]

To further test Hypothesis 2, we examine the impact of rival customer satisfaction on focal store customer satisfaction for each dimension of customer satisfaction. In column 2, we find that a one-point increase in rivals' customer satisfaction with quality yields a 0.18-point increase in a store's customer satisfaction with quality. Similarly, in columns 3 and 4, we find that a one-point increase in rival satisfaction with service (price) produces a 0.27 (0.16)-point increase in focal store customer satisfaction with service (price). These results provide support for H2.

While these results are consistent with H2, which posits that rivals' satisfaction positively influences a firm's own provision of customer satisfaction, an alternative explanation for these results is that one or more unobserved variables influences satisfaction for all stores within a local area. Although year fixed effects control for unobserved changes that may influence customer satisfaction at all stores (e.g. if wholesale food prices decline, resulting in lower retail prices, then customer satisfaction will rise for all stores), there may be local factors that influence customer satisfaction for all stores within the same area. For example, if the local economy is thriving, customers may tend to rate all local stores higher.

To examine this alternative explanation, we include customer satisfaction for 'sibling' stores: other stores owned by the focal chain, which are outside of the focal store's trading area but are rated by customers in the focal store's trading area. For example, some customers living in trading area x where focal store i is located may shop at another store j , owned by the focal chain, but in neighboring trading

area y , perhaps because it's closer to where they work. Because sibling stores are owned by the focal chain, they should not compete with each other. However, if there are unobserved changes that affect local stores and underlie the positive relationship between own and rival satisfaction, then we should observe the same positive relationship between the satisfaction of sibling stores located near each other.

Table 5 reports the results of this analysis, which includes the satisfaction of sibling stores rated by shoppers in the focal trading area. As in Table 4, the effect of rivals' overall customer satisfaction remains statistically insignificant, and the effect of sibling stores' overall customer satisfaction is also insignificant. Importantly, the effects of each of the three components of rival satisfaction remain positive and statistically significant. Satisfaction with quality and service of sibling stores also has positive and statistically significant effects on the focal store's level of satisfaction. These results provide some evidence that there are local factors affecting customer satisfaction for all nearby stores. However, F-tests indicate that, for all three components of customer satisfaction, the effect of rival satisfaction is significantly greater than the effect of sibling satisfaction. Consequently, although there may be local factors that cause the satisfaction ratings of all nearby stores to move together over time, rival satisfaction has an additional effect on a store's level of customer satisfaction. We posit that this effect reflects the competitive dynamics of firms responding to efforts by rivals to steal market share.

[Insert Table 5 about here]

To test Hypothesis 3, we first examine the impact of rival satisfaction on focal store sales performance (Table 6). The results, reported in column 1, show that rivals' overall customer satisfaction has a negative and statistically significant effect on store sales, providing support for Hypothesis 3. In columns 2-4 of Table 6 we examine the impact of each of the three components of rival satisfaction. The results indicate that rival satisfaction with quality and service has a negative and statistically significant impact on a store's sales, while the effect of rival satisfaction with price is statistically insignificant.

[Insert Table 6 about here]

These results provide additional support for Hypothesis 3, indicating that rivals' customer satisfaction has a negative impact on a store's sales performance. Moreover, these results suggest that

price competition has relatively little impact on the focal chain, while service and quality appear to be the more important competitive variables. This is consistent with the fact that the focal chain emphasizes service and quality, rather than prices, in its competitive strategy.

The results in Table 6 also show that the effect of rival customer satisfaction is often larger than the effect of the focal store's own customer satisfaction. For example, the coefficient on rivals' overall customer satisfaction (-0.09) indicates that a one-point increase in rivals' overall customer satisfaction yields a nine-percent decline in store sales (a one-standard deviation increase in rivals' overall customer satisfaction (0.19) yields a 1.7% decline in store sales performance). By comparison, a one-point increase in a store's own overall customer satisfaction only increases sales by six percent (a one-standard deviation increase in overall customer satisfaction (0.15) increases sales by less than one percent).

Taken together, the results suggest that rival customer satisfaction has a direct negative effect and an indirect positive effect on a store's sales. As rivals increase their customer satisfaction they steal customers from the focal store. This causes the focal store to increase its own customer satisfaction, which in turn yields higher sales. To assess the net effect of rival customer satisfaction, we reestimate the models in Table 6, excluding own customer satisfaction. We report these results in Table 7.

[Insert Table 7 about here]

When we omit own customer satisfaction, the effect of rivals' overall customer satisfaction remains unchanged (column 1), but the coefficient on each dimension of customer satisfaction becomes less negative (columns 2-4). However, the negative effects of rival customer satisfaction remain. These results show that the net effect of rival customer satisfaction on sales is negative, but that the negative effect is weakened by the focal store's increasing their provision of customer satisfaction in response to the threat of rivals increasing their customer satisfaction.

STUDY TWO

While the above results provide support for two of our hypotheses, their generalizability is limited because they are based on data from a single firm in one industry. For this reason, we conduct a second study using a multi-industry dataset of customer satisfaction ratings. Although this dataset is less

detailed and includes fewer control variables, it does allow us to consider the same relationships in a wide variety of industries. Moreover, it spans a longer time period and has more observations than the dataset used in Study One, allowing us to estimate relationships more precisely.

Data

The ACSI is designed to measure customer satisfaction with the quality of consumer goods and services available in the United States (ACSI, 2001). The brands included in the ACSI are broadly representative of the US economy serving household consumers (ACSI, 1999), spanning more than forty industries in seven economic sectors, and comprising about 40% of US GDP (ACSI, 2001). The ACSI is a quarterly survey. Each quarter, roughly 250 telephone interviews are conducted with randomly selected current customers for about one quarter of the brands in the Index. With a few exceptions, each brand's customers are surveyed in the same quarter every year (each year, a different group of customers is surveyed for each brand). After excluding government agencies and observations with missing data, our sample includes 1621 annual observations, comprising 212 brands, in 35 different industries, spanning a ten-year period 1994-2003 (some brands have fewer than ten observations because they do not enter the ACSI until after 1994, or because they drop out of the sample through consolidation).

Variables

Customer Satisfaction. ACSI uses a multiple indicator approach to measure customer satisfaction. A brand's overall customer satisfaction is measured as a composite of three measures: (1) an overall rating of satisfaction, (2) the degree to which performance falls short of or exceeds expectations, and (3) a rating of performance relative to the customers' ideal good or service in the category (Fornell, Johnson, Anderson, Cha, & Bryant, 1996). Each of these three items is measured on a 10-point scale. Customers' responses are aggregated to the brand level, and overall customer satisfaction is reported on a 0-100 scale (Fornell et. al., 1996). Each brand's rating represents "its customers' overall evaluation of total purchase and consumption experience, both actual and anticipated" (Fornell et. al., 1996: 7).

Rivals' Customer Satisfaction. We compute the average customer satisfaction of all brands in the same industry with distinct ownership. In some cases, the same corporation has more than one brand in

the same industry. For example, in the automobile industry, there are several different brands owned by Ford Motor Co., each with a separate customer satisfaction rating. For each of these brands, we exclude the satisfaction of the other brands owned by Ford in determining customer satisfaction with rival brands.

Market Structure. To measure market structure, we count the number of rival brands in the industry. This measure is analogous to the count of rival stores used in Study One.

Sales Performance. We obtain annual sales data from Compustat.⁴ These data are usually available only at the firm level. In a small number of cases, we are able to link segment-level sales data to individual brands for firms that have brands in different industries. However, firms that have more than one brand in the same industry receive the same sales value for each brand.

Merger Dummy. We control for the effect of acquisitions by including a merger dummy that takes a value of one if the brand has changed ownership during any previous year within the study, or if the brand's parent company acquired another brand within the sample. For example, Hewlett-Packard acquired Compaq in 2002. Therefore, the merger dummy takes a value of one for both Hewlett-Packard and Compaq during 2002 and 2003.

Fixed Effects. We include brand, year, and quarter fixed effects. Brand fixed effects control for differences across brands that might influence competitive conditions as well as the brand's customer satisfaction and/or sales. For example, more successful brands may have higher levels of customer satisfaction and compete in markets with more competitors than their less successful counterparts. Year fixed effects control for annual variation in customer satisfaction and sales. For example, during high demand periods there may be both high levels of customer satisfaction and increasing numbers of rivals. Quarter fixed effects control for seasonality differences affecting sales and customer satisfaction ratings.

Results

⁴ In this study, we measure sales in the same year that we measure customer satisfaction because lagging the customer satisfaction measure one year creates a very long lag for those firms whose ratings are determined in the first or second quarter of the year. When we lag customer satisfaction one year for all firms, the effect of rival customer satisfaction becomes statistically insignificant. However, when we lag customer satisfaction only for brands whose customers were surveyed in the third and fourth quarter, we find that the link between sales performance and rival's customer satisfaction reported below is stronger than what we report below.

Table 8 provides descriptive statistics and a correlation matrix. Mean annual sales are about \$33 billion, indicating that these are all leading national brands owned by large firms. The mean level of customer satisfaction is 76, and there are no substantial differences between own and rival customer satisfaction. The mean number of rival brands in a market is almost nine.

[Insert Table 8 about here]

To test our hypotheses, we conduct analyses similar to those that we carried out in Study One. Table 9 reports the results for H1 and H2. We first examine the impact of market structure on a brand's customer satisfaction (H1). We report these results in column 1. The results indicate that the number of rivals in the market has a positive impact on a brand's own customer satisfaction. This result provides support for H1. Each additional rival brand yields a 0.4% increase in a firm's customer satisfaction rating. To test H2, we include rivals' customer satisfaction. Column 2 reports the results, which reveal that rivals' satisfaction has a positive effect on a brand's own level of customer satisfaction. This provides support for H2, indicating that a one percent increase in rivals' customer satisfaction yields a 0.42 percent increase in customer satisfaction of the focal brand. To further examine the impact of rivals' satisfaction, column 3 includes the average customer satisfaction rating for a set of smaller rivals (in each industry, ACSI includes an aggregate customer satisfaction rating for a group of smaller brands that it labels "All Others.>"). The results indicate that satisfaction with these smaller rivals also has a positive, though smaller impact on customer satisfaction (0.12 versus 0.42 for the major rivals). These results suggest that the leading brands are more influenced by other market leaders than by smaller rivals in the industry.

[Insert Table 9 about here]

While these results are consistent with Hypothesis 2, which posits that rivals' customer satisfaction influences a firm's own provision of customer satisfaction, we note above alternative explanation for these results: some unobserved variable(s) may influence all firms' satisfaction levels. Although year and quarter fixed effects control for economy-wide changes in customer satisfaction, there may be industry-specific factors that affect customer satisfaction. For example, the quality of a widely-used input may increase, resulting in an industry-wide improvement in product quality.

To test this alternative explanation, we follow a similar approach to the one that we used in Study One. Specifically, we compare the impact of the satisfaction of rival brands with the satisfaction of “sibling” brands: brands in the same industry owned by the same parent company. For example, in the car industry, Chevrolet and Buick are sibling brands, because they are both owned by General Motors. While we expect rival brands to have a positive impact on a firm’s own level of customer satisfaction, we do not expect sibling brands to do so, because they are not rivals. However, if there is some unobservable factor(s) causing the satisfaction levels of all brands in the industry to rise, then this should result in a positive correlation between a focal brand’s level of satisfaction and the satisfaction scores of its siblings.

We report the results of this analysis in column 4 of Table 9. The sample is much smaller because there are only 176 observations in which a brand has at least one sibling brand in the same industry. While rivals’ customer satisfaction continues to exert a positive effect on a brand’s customer satisfaction, customer satisfaction of sibling brands has no effect. These results provide additional support for H2, showing that the positive relationship between own and rival customer satisfaction reflects firms’ efforts to respond to the threat posed by rivals improving their customer satisfaction and is not confounded by unobserved factors that affect all brands’ customer satisfaction ratings.

To test H3, we examine the impact of rival satisfaction on sales performance (Table 10). Column 1 includes a brand’s customer satisfaction along with the customer satisfaction of rival brands. While the brand’s own customer satisfaction has a positive effect on its sales, rivals’ customer satisfaction has a negative and statistically significant effect. This latter result provides support for H3. Moreover, consistent with the results of Study One, the effect of rival satisfaction is larger than the effect of own satisfaction. As rivals’ satisfaction increases by one percent, a brand’s sales declines by 1.26 percent, while a one percent increase in own satisfaction yields only a 1.01 percent increase in sales. In column 2 we include the satisfaction of the smaller rival brands. The satisfaction level of the smaller rival brands has no effect on sales. This again suggests that smaller rivals pose less of a threat to industry leaders.

[Insert Table 10 about here]

The results in the first two columns of Table 10 reveal the direct negative effect of rival customer satisfaction. However, the results again suggest a positive indirect effect of rivals' customer satisfaction, through its positive effect on a brand's own satisfaction. To assess the net effect of rivals' customer satisfaction on sales, we exclude the brand's own customer satisfaction from the model. We report the results in column 3. As we found in Study One, the effect of rivals' customer satisfaction remains negative, but is smaller, when we do not control for own customer satisfaction. This provides further evidence that the net effect of rivals' customer satisfaction is negative, and that this effect is weakened by the focal firm's response to the threat posed by rivals increasing their provision of customer satisfaction.

Taken together, these results provide strong support for Hypotheses 1-3. The results suggest that the number of rival brands in an industry has a positive effect on customer satisfaction ratings, as does the satisfaction ratings of these rivals. Moreover, rivals' customer satisfaction ratings are economically meaningful, as rival satisfaction has a negative and statistically significant effect on brand sales.

DISCUSSION AND CONCLUSION

Our results provide evidence that the amount of competition and the conduct of competitors impact the provision of customer satisfaction, and that rivals' customer satisfaction impacts a firm's sales performance (see Table 11 for a summary of our findings). The results extend two different perspectives on competition, SCP and competitive dynamics, into the area of customer satisfaction, and show that firms compete to provide better customer satisfaction, with this competition affecting sales.

[Insert Table 11 about here]

Regarding the impact of market structure, the results of Study One provide no evidence of a relationship between the number of rival stores and customer satisfaction in the supermarket industry. However, in Study Two we do find that the number of rival brands positively affects a brand's customer satisfaction. These results provide partial support for the SCP framework, which posits that the amount of competition in a market positively influences the competitive conduct of firms in that market. While many studies find that market structure affects prices, our results indicate that this relationship extends to a firm's overall customer satisfaction.

The mixed results that we find regarding the effect of market structure on customer satisfaction may reflect the endogeneity of the market structure. For example, customers who are less satisfied with a focal grocery store may be more likely to try other grocery stores. In addition, customers may be more likely to evaluate firms on a relative basis (i.e., comparing the focal firm with its rivals) when there are more grocery stores. Interestingly, in results not reported here, we find some evidence that initially customer satisfaction increases with the number of rival stores, but then falls at higher levels. This suggests that as the number of stores increases, the effect of relative rating and/or dissatisfied customers switching to other stores may become more important.

Regarding the effect of rivals' customer satisfaction, we find that grocery stores improve their customer satisfaction ratings when rivals do. On each dimension of customer satisfaction we find a positive relationship between own and rival satisfaction. These results show that customer satisfaction is not simply a proxy for low prices in our data. They indicate that supermarkets compete on service and quality, as well as on prices. In Study Two, we also find a positive relationship between own and rival customer satisfaction. These results provide support for the competitive dynamics framework, which emphasizes that firms' competitive behavior is influenced by the competitive attacks of rivals.

Taken together, these results support our claim that customer satisfaction ratings may be used as an indicator of a firm's behavior. Underlying our hypotheses is the premise that a firm can influence its customer satisfaction ratings through its actions. More intense competition and competitive attacks spur firms to improve their customer satisfaction. We should not find support for these hypotheses if customer satisfaction ratings do not reflect a firm's efforts to enhance quality, service, and/or price. If not, it seems likely that relative rating may induce a positive negative correlation between own and rival satisfaction, which may help to explain why we do not find a positive relationship between own and rival overall customer satisfaction in Study One. Relative rating seems likely in this context, where consumers rate multiple stores, and especially so for overall customer satisfaction, where the survey does not focus on any particular aspect of the store. The possibility of consumers using relative rating schemes makes the

positive effect of each dimension of rival satisfaction on own satisfaction even more notable, and suggests that firms compete aggressively on customer satisfaction.

An alternative explanation for the positive relationship between own and rival customer satisfaction is that other factors cause all firms' satisfaction ratings to move together. But, we exclude this possibility by showing that the same positive relationship does not exist between the satisfaction ratings of stores (brands) owned by the same corporate parent. This provides strong evidence that it is the threat created by rivals' improving satisfaction that drives a firm to improve its own satisfaction.

Both studies provide evidence that rival satisfaction not only influences a firm's behavior but also impacts its sales. When rivals' satisfaction rises, the focal firm's sales declines. However, in both studies, the net effect of rival satisfaction on sales is weakened by the focal firm's efforts to improve its own customer satisfaction when rivals increase their customer satisfaction.

Limitations and Future Research

A limitation of both studies is the use of customer satisfaction ratings to measure firm efforts to enhance customer satisfaction. As we discuss above, while customer satisfaction ratings are a good measure of consumer perceptions, they are a noisy measure of firms' efforts to influence those perceptions. Customers' satisfaction with a firm may depend on their satisfaction with rival firms and on other factors outside of the firm's control. Despite this, we find support for our hypotheses, suggesting that our results are robust. An additional limitation of both studies is the potential endogeneity of market structure in the customer satisfaction models. It may be that unobserved changes in market conditions may influence both competition and customer satisfaction. For example, if demand for a product increases, then we might expect both entry and higher customer satisfaction, yielding a spurious positive correlation between competition and customer satisfaction. There are some additional limitations in our multi-industry analysis (Study Two). First, in most cases, the sales data are measured at the parent-company level, rather than at the brand level. Second, our measure of market structure is noisy, as it varies over time mainly due to consolidation and changes in the brands included in the ACSI.

Nonetheless, we believe that the results of Study Two suggest that the results regarding the effects of rival customer satisfaction that we find for grocery stores in Study One generalize to a wide range of settings.

Future research should focus on identifying and measuring the specific actions that companies take to increase their level of satisfaction with service, quality and price. This will help managers to assess the costs of incorporating customer satisfaction into the competitive strategy of the firm as well as its implications for profits. It will also help managers to determine which rival actions most threaten their firm's own customer satisfaction.

Conclusion

In this paper, we examine the competitive causes and consequences of customer satisfaction. We provide evidence that competitive pressures spur firms to improve their provision of customer satisfaction, that firms compete on multiple dimensions of customer satisfaction, and that this competition impacts the firm's revenues. We hope that our findings spur more research by scholars regarding the use and effects of customer satisfaction as a competitive, strategic variable.

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TABLE 1
Customer Satisfaction Dimensions and Survey Items

| Satisfaction Dimension | Survey Items |
|--|---|
| Service Reliability Alpha = 0.87 | Fast check out service Extremely helpful employees Excellent service in the deli |
| Quality Reliability Alpha = 0.94 | High quality in-store bakery High quality seafood Excellent quality fresh fruits and vegetables High quality deli meats and salads High quality fresh meat Carries all the grocery items, brands, and sizes Fresh, high quality dairy products Strict sanitation standards |
| Price Reliability Alpha = 0.75 | Overall, has low everyday prices Has great sales in its store circular Always has the items advertised in their circular in stock. |

TABLE 2
Study One Descriptive Statistics and Correlation Matrix

| | N | Mean | S.D. | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. |
|-------------------------------------|-----|-------|-------|-------|------|------|------|------|------|------|------|------|
| 1. Sales (\$ millions) ^a | 578 | 36.42 | 10.31 | | | | | | | | | |
| 2. Overall Satisfaction | 578 | 4.07 | 0.15 | 0.15 | | | | | | | | |
| 3. Satisfaction with Quality | 561 | 4.05 | 0.14 | 0.17 | 0.82 | | | | | | | |
| 4. Satisfaction with Service | 578 | 3.93 | 0.15 | -0.00 | 0.81 | 0.79 | | | | | | |
| 5. Satisfaction with Price | 578 | 3.73 | 0.18 | 0.06 | 0.61 | 0.43 | 0.51 | | | | | |
| 6. Overall Rival Satisfaction | 578 | 3.83 | 0.19 | -0.21 | 0.21 | 0.27 | 0.30 | 0.30 | | | | |
| 7. Satisfaction with Rival Quality | 561 | 3.86 | 0.18 | -0.16 | 0.25 | 0.30 | 0.34 | 0.37 | 0.91 | | | |
| 8. Satisfaction with Rival Service | 578 | 3.85 | 0.18 | -0.14 | 0.20 | 0.24 | 0.28 | 0.39 | 0.86 | 0.87 | | |
| 9. Satisfaction with Rival Price | 578 | 3.76 | 0.18 | -0.07 | 0.42 | 0.55 | 0.52 | 0.14 | 0.66 | 0.61 | 0.53 | |
| 10. Rival Stores | 578 | 7.04 | 3.32 | -0.04 | 0.17 | 0.21 | 0.13 | 0.13 | 0.43 | 0.44 | 0.33 | 0.27 |

Correlations > .08 are significant at 0.05. All satisfaction variables are measured on a 1-5 scale.

^a Log of Sales is used to calculate the correlations.

TABLE 3
Study One Results for Hypothesis 1: The Effect of Market Structure on Customer Satisfaction

| | Overall Customer Satisfaction | Satisfaction with Quality | Satisfaction with Service | Satisfaction with Price |
|--------------------------------|-------------------------------------|------------------------------|------------------------------|----------------------------|
| Rival Stores (*10) | -0.00 (0.03) | 0.00 (0.03) | -0.01 (0.03) | 0.02 (0.03) |
| Most Convenient | -0.70 (0.09)** | -0.47 (0.09)** | -0.49 (0.10)** | -0.91 (0.10)** |
| Employees ^a | 0.05 (0.06) | 0.07 (0.05) | 0.15 (0.06)* | 0.15 (0.06)* |
| Turnover Rate | 0.07 (0.06) | 0.08 (0.04) | 0.15 (0.05)** | 0.06 (0.05) |
| Percent Full-Time Employees | 0.08 (0.04) | -0.04 (0.06) | -0.13 (0.07) | 0.18 (0.07)** |
| Married | -0.03 (0.05) | -0.01 (0.06) | -0.01 (0.05) | 0.04 (0.05) |
| Children | 0.00 (0.04) | 0.02 (0.04) | 0.04 (0.05) | 0.00 (0.04) |
| Age | 0.06 (0.03)* | 0.05 (0.03) | 0.08 (0.03)* | 0.06 (0.03) |
| Income | 0.04 (0.02) | 0.04 (0.02)* | 0.06 (0.02)** | 0.06 (0.02)* |
| Remodel | 0.01 (0.01) | 0.00 (0.01) | -0.01 (0.02) | 0.02 (0.02) |
| R-Squared | 0.69 | 0.66 | 0.61 | 0.74 |
| N | 578 | 561 | 578 | 578 |

* Significant at 05; ** Significant at .01. Standard errors are in parentheses.

Store and year fixed effects are included in all models.

^a Logarithm.

TABLE 4
Study One Results for Hypothesis 2: The Effect of Rivals' Satisfaction on Own Customer Satisfaction

| | Overall Customer Satisfaction | Satisfaction with Quality | Satisfaction with Service | Satisfaction with Price |
|--|-------------------------------|---------------------------|---------------------------|-------------------------|
| Overall Rival Customer Satisfaction | -0.04 (0.05) | | | |
| Satisfaction with Rival Quality | | 0.18 (0.04)** | | |
| Satisfaction with Rival Service | | | 0.27 (0.04)** | |
| Satisfaction with Rival Price | | | | 0.16 (0.05)** |
| Rival Stores (*10) | -0.00 (0.03) | 0.00 (0.03) | -0.00 (0.03) | 0.03 (0.03) |
| Most Convenient Employees ^a | -0.68 (0.10)** | -0.51 (0.09)** | -0.57 (0.10)** | -0.91 (0.10)** |
| Turnover Rate | 0.07 (0.06) | 0.07 (0.05) | 0.17 (0.06)** | 0.15 (0.06)* |
| Percent Full-Time Employees | 0.08 (0.04) | 0.08 (0.04) | 0.16 (0.04)** | 0.07 (0.05) |
| Married | -0.01 (0.06) | -0.00 (0.06) | -0.08 (0.07) | 0.18 (0.07)** |
| Children | -0.03 (0.05) | -0.02 (0.05) | -0.00 (0.05) | 0.03 (0.05) |
| Age | -0.00 (0.04) | 0.03 (0.04) | 0.04 (0.04) | 0.02 (0.04) |
| Income | 0.06 (0.03)* | 0.05 (0.03) | 0.08 (0.03)* | 0.07 (0.03)* |
| Remodel | 0.04 (0.02) | 0.03 (0.02) | 0.05 (0.02)* | 0.05 (0.02)* |
| R-Squared | 0.01 (0.01) | 0.00 (0.01) | -0.01 (0.02) | 0.01 (0.02) |
| N | 0.69 | 0.68 | 0.64 | 0.74 |
| | 578 | 561 | 578 | 578 |

* Significant at 05; ** Significant at .01. Standard errors are in parentheses.

Store and year fixed effects are included in all models.

^a Logarithm.

TABLE 5
Study One Additional Results for Hypothesis 2: Controlling for Satisfaction of Sibling Stores

| | Overall Customer Satisfaction | Satisfaction with Quality | Satisfaction with Service | Satisfaction with Price |
|--|-------------------------------------|------------------------------|------------------------------|----------------------------|
| Overall Rival Customer Satisfaction | -0.03 (0.05) | | | |
| Satisfaction with Rival Quality | | 0.17 (0.05)** | | |
| Satisfaction with Rival Service | | | 0.26 (0.05)** | |
| Satisfaction with Rival Price | | | | 0.15 (0.06)** |
| Overall Sibling Satisfaction | -0.02 (0.02) | | | |
| Satisfaction with Sibling Quality | | 0.05 (0.02)* | | |
| Satisfaction with Sibling Service | | | 0.05 (0.02)* | |
| Satisfaction with Sibling Price | | | | -0.01 (0.02) |
| Rival Stores (*10) | 0.01 (0.03) | 0.01 (0.03) | 0.00 (0.03) | 0.02 (0.03) |
| Most Convenient Employees ^a | -0.66 (0.10)** | -0.50 (0.10)** | -0.54 (0.10)** | -0.91 (0.11)** |
| Turnover Rate | 0.07 (0.06) | 0.07 (0.05) | 0.17 (0.06)** | 0.14 (0.07)* |
| Percent Full-Time Employees | 0.07 (0.04) | 0.06 (0.04) | 0.15 (0.05)** | 0.07 (0.05) |
| Married | -0.03 (0.06) | -0.01 (0.06) | -0.11 (0.07) | 0.17 (0.07)* |
| Children | -0.02 (0.05) | -0.01 (0.05) | 0.00 (0.05) | 0.05 (0.05) |
| Age | 0.00 (0.04) | 0.02 (0.04) | 0.02 (0.04) | 0.03 (0.05) |
| Income | 0.07 (0.03)* | 0.05 (0.03) | 0.08 (0.03)* | 0.08 (0.04)* |
| Remodel | 0.03 (0.02) | 0.02 (0.02) | 0.04 (0.02) | 0.05 (0.02)* |
| R-Squared | 0.01 (0.01) | 0.00 (0.01) | -0.01 (0.02) | 0.02 (0.02) |
| N | 0.69 | 0.68 | 0.65 | 0.72 |
| | 551 | 532 | 547 | 550 |

* Significant at 05; ** Significant at .01. Standard errors are in parentheses.

Store and year fixed effects are included in all models.

^a Logarithm.

TABLE 6
Study One Results for Hypothesis 3: The Effect of Rival Customer Satisfaction on Store Sales Performance

| | Log Sales Performance | Log Sales Performance | Log Sales Performance | Log Sales Performance |
|-------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Overall Customer Satisfaction | 0.06 (0.03)* | | | |
| Satisfaction with Quality | | 0.03 (0.03) | | |
| Satisfaction with Service | | | 0.07 (0.03)* | |
| Satisfaction with Price | | | | 0.04 (0.03) |
| Overall Rival Customer Satisfaction | -0.09 (0.03)** | | | |
| Satisfaction with Rival Quality | | -0.10 (0.03)** | | |
| Satisfaction with Rival Service | | | -0.07 (0.03)** | |
| Satisfaction with Rival Price | | | | -0.04 (0.03) |
| Rival Stores | -0.03 (0.02) | -0.03 (0.02) | -0.03 (0.02) | -0.03 (0.02) |
| Most Convenient | 0.06 (0.06) | 0.03 (0.06) | 0.04 (0.06) | 0.03 (0.06) |
| Employees ^a | 0.27 (0.03)** | 0.26 (0.03)** | 0.26 (0.03)** | 0.27 (0.03)** |
| Turnover Rate | 0.04 (0.02) | 0.05 (0.02) | 0.04 (0.02) | 0.05 (0.02) |
| Percent Full-Time Employees | -0.05 (0.04) | -0.06 (0.04) | -0.05 (0.04) | -0.06 (0.04) |
| Married | 0.03 (0.03) | 0.01 (0.03) | 0.02 (0.03) | 0.02 (0.03) |
| Children | -0.05 (0.02)* | -0.05 (0.02)* | -0.05 (0.02)* | -0.05 (0.02)* |
| Age | -0.03 (0.02) | -0.03 (0.02) | -0.03 (0.02) | -0.03 (0.02) |
| Income | 0.01 (0.01) | 0.01 (0.01) | 0.01 (0.01) | 0.01 (0.01) |
| Remodel | 0.01 (0.01) | 0.01 (0.01) | 0.01 (0.01) | 0.01 (0.01) |
| R-Squared | 0.97 | 0.97 | 0.97 | 0.97 |
| N | 578 | 561 | 578 | 578 |

* Significant at 05; ** Significant at .01. Standard errors are in parentheses.

Store and year fixed effects are included in all models.

^a Logarithm.

TABLE 7
Study One Additional Analysis: The Net Effect of Rival Customer Satisfaction on Store Sales Performance

| | Log Sales Performance | Log Sales Performance | Log Sales Performance | Log Sales Performance |
|-------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Overall Rival Customer Satisfaction | -0.09 (0.03)** | | | |
| Satisfaction with Rival Quality | | -0.09 (0.03)** | | |
| Satisfaction with Rival Service | | | -0.05 (0.03)* | |
| Satisfaction with Rival Price | | | | -0.03 (0.03) |
| Rival Stores | -0.03 (0.02) | -0.03 (0.02) | -0.03 (0.02) | -0.03 (0.02) |
| Most Convenient | 0.02 (0.06) | 0.01 (0.06) | 0.00 (0.06) | -0.01 (0.06) |
| Employees ^a | 0.27 (0.03)** | 0.27 (0.03)** | 0.27 (0.03)** | 0.27 (0.03)** |
| Turnover Rate | 0.05 (0.02) | 0.05 (0.02)* | 0.05 (0.02)* | 0.05 (0.02)* |
| Percent Full-Time Employees | -0.05 (0.04) | -0.06 (0.04) | -0.06 (0.04) | -0.05 (0.04) |
| Married | 0.03 (0.03) | 0.01 (0.03) | 0.02 (0.03) | 0.03 (0.03) |
| Children | -0.05 (0.02)* | -0.05 (0.02)* | -0.05 (0.02)* | -0.05 (0.02)* |
| Age | -0.03 (0.02) | -0.03 (0.02) | -0.03 (0.02) | -0.03 (0.02) |
| Income | 0.01 (0.01) | 0.01 (0.01) | 0.01 (0.01) | 0.01 (0.01) |
| Remodel | 0.01 (0.01) | 0.01 (0.01) | 0.01 (0.01) | 0.01 (0.01) |
| R-Squared | 0.97 | 0.97 | 0.97 | 0.97 |
| N | 578 | 561 | 578 | 578 |

* Significant at 05; ** Significant at .01. Standard errors are in parentheses.

Store and year fixed effects are included in all models.

^a Logarithm.

TABLE 8
Study Two Descriptive Statistics and Correlation Matrix

| | N | Mean | S.D. | 1. | 2. | 3. | 4. |
|------------------------|------|-------|-------|------|-------|-------|------|
| 1. Sales (\$ billions) | 1413 | 33.00 | 46.57 | | | | |
| 2. Satisfaction | 1621 | 76.19 | 6.43 | 0.18 | | | |
| 3. Rival Satisfaction | 1621 | 76.11 | 5.60 | 0.20 | 0.77 | | |
| 4. Rival Brands | 1621 | 8.56 | 5.98 | 0.23 | 0.13 | 0.16 | |
| 5. Merge | 1621 | 0.03 | 0.18 | 0.20 | -0.05 | -0.03 | 0.05 |

Correlations > .05 are significant at 0.05. All satisfaction variables are measured on a 1-100 scale.

TABLE 9
Study Two Results for Hypotheses 1 and 2: The Effect of Competition on Own Customer Satisfaction

| | Log of Customer Satisfaction | Log of Customer Satisfaction | Log of Customer Satisfaction | Log of Customer Satisfaction |
|------------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| Rival Brands (*10) | 0.04 (0.01)** | 0.03 (0.01)** | 0.02 (0.01) | -0.02 (0.03) |
| Log Rival Satisfaction | | 0.42 (0.03)** | 0.42 (0.03)** | 0.28 (0.12)* |
| Log Satisfaction of Fringe Rivals | | | 0.12 (0.02)** | |
| Log Satisfaction of Sibling Brands | | | | 0.00 (0.12) |
| Merge | 0.01 (0.01) | 0.00 (0.01) | 0.00 (0.01) | 0.01 (0.01) |
| R-Squared | 0.86 | 0.87 | 0.89 | 0.92 |
| N | 1621 | 1621 | 1443 | 176 |

* Significant at 05; ** Significant at .01. Standard errors are in parentheses.
Brand, year, and quarter fixed effects are included in all models.

TABLE 10
Study Two Results for Hypothesis 3: The Effect of Rival Satisfaction on Sales Performance

| | Log Sales | Log Sales | Log Sales | Log Sales |
|--------------------------------------|----------------|----------------|----------------|----------------|
| Rival Brands (*10) | -0.04 (0.01)** | -0.04 (0.01)** | -0.03 (0.01)** | -0.04 (0.01)** |
| Log Own Satisfaction | 1.01 (0.35)** | 0.92 (0.34)** | | |
| Log Rival Satisfaction | -1.26 (0.45)** | -0.91 (0.39)* | -0.88 (0.43)* | -0.56 (0.37) |
| Log Satisfaction of Fringe Rivals | | -0.09 (0.28) | | 0.05 (0.28) |
| Merge | -0.03 (0.09) | -0.07 (0.07) | -0.02 (0.09) | -0.06 (0.07) |
| R-Squared | 0.92 | 0.95 | 0.92 | 0.95 |
| N | 1413 | 1249 | 1413 | 1249 |

* $p < .05$; ** $p < .01$. Standard errors are in parentheses.

Brand, year, and quarter fixed effects are included in all models.

TABLE 11
Summary of Findings

| | Hypothesis 1 | Hypothesis 2 | Hypothesis 3 |
|-----------|--|--|---|
| Study One | The number of rival stores does not affect customer satisfaction. The convenience of the store's location negatively affects its customer satisfaction. | Rivals' overall customer satisfaction has no effect on a store's overall customer satisfaction. Rivals' customer satisfaction with quality, service, and price increases a store's own customer satisfaction on each of these three dimensions. | Rivals' overall customer satisfaction reduces a store's sales performance. Rivals' customer satisfaction with quality and service reduces a store's sales performance. |
| Study Two | The number of rival brands increases customer satisfaction. | Rivals' customer satisfaction increases a brand's own customer satisfaction. | Rivals' customer satisfaction reduces a brand's sales performance. |

APPENDIX A

Elements of the Customer Satisfaction Survey

1. Having strict sanitation standards.
2. Carrying all the grocery items, brands, and sizes you use.
3. Always having fresh, high quality dairy products.
4. Having excellent quality fresh fruits & vegetables.
5. Having high quality fresh meat
6. Having high quality deli meats and salads.
7. Providing excellent service in the deli.
8. Having extremely helpful employees.
9. Having fast check out service.
10. Overall, having low everyday prices.
11. Having great sales in its weekly store circular.
12. Always having the items advertised in their circular in stock.
13. Actively supporting the local community.
14. Having high quality seafood
15. Having a high quality in-store bakery.
16. Overall satisfaction with the store