



## **Defensive Marketing Strategy by Customer Complaint Management: A Theoretical Analysis**

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On the basis of Hirschman's exit-voice theory, an economic model of defensive marketing strategy is developed for complaint management. Though many firms strive to reduce the number of customer complaints about their products, this objective is found to be questionable. Instead, analysis suggests complaints from dissatisfied customers should be maximized subject to certain cost restrictions. The authors also show that defensive marketing (e.g., complaint management) can lower the total marketing expenditure by substantially reducing the cost of offensive marketing (e.g., advertising). The savings in offensive marketing are often high enough to offset the additional costs associated with compensating complaining customers, even if compensation exceeds the product's profit margin.

## Defensive Marketing Strategy by Customer Complaint Management: A Theoretical Analysis

Firms improve sales and market shares in a variety of ways. Successful marketing strategy basically depends on the firm's ability to identify and influence the flows of customers into and out of its franchise and into and out of the market. These flows consist of (1) additional customer entry to the market, (2) brand shifting or change of patronage, (3) customer market exit, and (4) changes in purchase frequency. Firms seek to control these four customer flows because they are the ultimate determinants of growth, stagnation, or decline.

The marketing literature emphasizes strategies designed to obtain additional customers, encourage brand switching, and increase purchase frequency. These are offensive, as opposed to defensive, measures. In the face of increasing competition and/or maturing industries or shrinking markets, offensive objectives become increasingly difficult to meet. The cost of generating a new customer can substantially exceed the cost of retaining a

present customer. Because low growth and highly competitive markets are increasingly common characteristics of many industries (e.g., automobiles, farm machinery, radio and TV, primary metals, engines and turbines, photographic goods, tobacco products, and clothing, to mention just a few; U.S. Department of Commerce 1986), defensive marketing strategy is becoming more important. Instead of attempting to obtain new customers or encourage brand switching, defensive marketing is concerned with *reducing* customer exit and brand switching. That is, the objective of defensive marketing strategy is to minimize customer turnover (or, equivalently, to maximize customer retention) by protecting products and markets from competitive inroads.

Very little theoretical or empirical research has been done on defensive marketing, with the exception of work on brand loyalty (Wind 1982). Among the exceptions is the work by Hauser and Shugan (1983). They develop a normative model of how a firm with an established brand should adjust its marketing expenditures to defend its position against the launch of a new competitive brand. Application of the model is discussed by Hauser and Gaskin (1984), Hauser (1984), and Shugan (1987). Another interesting approach is presented by Gensch (1984), who segments industrial buyers on the basis of probabilities of switching and loyalty as a first step in determining the allocation of resources to offensive versus

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defensive marketing. In the popular management literature, Porter (1985) devotes a chapter to defensive strategy.

Our approach is similar in spirit to Hauser and Shugan's, but we examine an interplay of *both* offensive and defensive marketing in such a way that market share and profit can not only be maintained, but also increased. Hauser and Shugan define defensive marketing strategy as the reaction of a brand to the launch of a new competitive brand. Our conceptualization of defensive strategy is somewhat more general and does not require new entrants. This distinction may be important because defensive strategy is especially attractive in industries that are stagnant or shrinking. Under such conditions, an industry is less likely to attract new firm entries. In the model we develop, the guiding principle is to prevent both current and/or new competitors from taking away the firm's business.

In addition to the literature on defensive strategy, an area of research in the field of consumer affairs is relevant to our study. Of particular interest are the studies that have examined consumer dissatisfaction, complaints, and subsequent purchase behavior. The value of complaints, both as a communication device and as a means of giving the firm a chance to turn a dissatisfied customer into a satisfied and loyal customer, was analyzed more than 10 years ago (Fornell 1976). A few years later, the U.S. Office of Consumer Affairs commissioned a survey of business complaint handling (TARP 1979). Its findings confirmed those of Fornell—that complaint-handling practices needed upgrading in most companies. TARP also presented consumer data suggesting that complaining customers showed stronger brand loyalty than customers who did not complain and that loyalty could be strengthened further by the firm's complaint handling.

The analysis we develop is very different from that presented by TARP. We use economic theory and formal analysis to demonstrate how defensive marketing (e.g., retaining dissatisfied customers) can have a substantial impact on a firm's market share and profits and also can lower the cost of offensive marketing. We amplify previous empirical findings (and recommendations by TARP) by providing a mathematical analysis based on formal theory.

We begin by stating the necessary assumptions about consumer dissatisfaction and subsequent purchase behavior. The theoretical framework, which comes from the economist Albert O. Hirschman, then is described briefly. Next we turn to the model development. For simplicity, our baseline case is a duopoly in which neither firm is actively encouraging complaints from dissatisfied customers. We analyze the effects when one firm decides to use defensive strategy in the form of complaint management and also the effects of the symmetric case when both firms do so. Having laid the groundwork for the mathematical model in a very simple market structure (duopoly), we extend the analysis to the

*n*-firm oligopoly and find complaint management can increase a firm's market share as well as reduce its expenditures for offensive marketing. Finally, we illustrate these effects by using published data. We conclude with a discussion of limitations and a summary.

### BASIC ASSUMPTIONS

It is a truism that the way to retain customers is to treat them well. However, all firms cannot achieve 100% customer satisfaction for all customers all the time. There will always be some customer dissatisfaction due to a variety of causes (including, at least for certain types of products, customer desire for variety). In nongrowth markets, competition centers around the (more or less) dissatisfied customers. For the purpose of our analysis, it is sufficient to define dissatisfaction as a state of cognitive/affective discomfort caused by an insufficient return relative to the resources spent by the consumer at any stage of the purchase/consumption process. The resources typically consist of money, time, and energy whereas the return is the utility obtained.

The implications from this view of customer dissatisfaction are that (1) satisfaction can be restored by increasing the return to the customer (e.g., by money back or other forms of compensation) and (2) dissatisfaction is a matter of degree and hence does not automatically cause a buyer to desert a "faltering" seller. Because of the risk and cost of switching, the dissatisfied customer may in fact decide to repurchase from the same firm.

A fundamental objective of defensive marketing is to manage customer dissatisfaction in such a manner that its negative and harmful effects on the firm are minimized. The basic purpose of offensive marketing (in nongrowth markets) is to attract competitors' dissatisfied buyers. We assume once a buyer has become dissatisfied with a brand the loyalty to that brand declines, but the probability of repurchasing the brand *does not* go to zero (Schmalensee 1978; Smallwood and Conlisk 1979 make the same assumption). In particular, we assume consumers make their brand choice decision in two stages. First, if the brand last purchased was satisfactory, they remain loyal. If it was not satisfactory, they go to a second stage. In our formulation, consumers in the second stage select among *all* brands in the market according to the offensive marketing efforts undertaken by those brands. This type of behavior is a consequence of what has been called "weak dissatisfaction" by Schmalensee (1978) and Smallwood and Conlisk (1979) and facilitates the algebra to follow. An alternative state, "strong dissatisfaction," in which consumers in the second stage select from all brands *except* that last purchased, gives similar results but requires more complicated (though not more enlightening) analytics.

Empirical research (see Fornell 1987; TARP 1979, 1986) suggests most buyer complaints have their roots in some dissatisfaction or problems the buyer experienced while using the product (including problems in having products serviced). Apparently such problems are

fairly seldom caused by product malfunctions or breakdowns or by fraudulent business conduct. In fact, most empirical studies on the matter suggest buyer grievances typically can be explained by ignorance, misunderstandings, inflated expectations, or disagreements (Steele 1977). Thus, our assumption that it should be possible to retain at least a fraction of the "weakly dissatisfied" customers is not without (at least indirect) empirical support.

A firm's dissatisfied customers may well represent competing firms' only growth opportunity in stagnating markets. Thus, there is always some probability that (1) a buyer will be dissatisfied and (2) consider switching to another brand (firm) whose advertising is designed to attract dissatisfied buyers. This is the starting point of our analysis. The first step a firm must take to prevent adverse brand-switching or customer exit is to identify the buyers who are dissatisfied. The second step is persuading those buyers to remain loyal. Our analysis shows that *maximizing* the number of complaints from dissatisfied customers (subject to certain cost constraints) is in the best interest of the firm. This finding appears to be contrary to common business practice (see Fornell and Westbrook 1984). Our analysis further shows that the firm often is well advised to compensate dissatisfied buyers with amounts exceeding the product's contribution to overhead. Finally, we show that by attracting and resolving complaints, the firm can defend against competitive advertising and lower the cost of offensive marketing without losing market share.

#### HIRSCHMAN'S EXIT-VOICE THEORY

A useful theoretical framework that is the foundation for our normative model is provided by Hirschman (1970). His exit-voice theory pertains to situations in which a client of an organization, in our context a customer of a business firm, becomes dissatisfied with the services or products provided by the organization. According to Hirschman, management discovers its failure to provide satisfaction via two feedback mechanisms, exit and voice. Exit implies that the customer stops buying from the firm. Voice is the customer's complaint that expresses the dissatisfaction directly to the firm.

According to traditional microeconomic theory, exit is a powerful corrective market mechanism. When a firm fails to meet consumer expectations, it is punished by customer withdrawal or a shift in buyer patronage. The efficacy of competition is essential to the idea of exit as a means for affecting the firm's decision making; exit causes shifts in revenue among competing firms and sets market forces in motion such that faltering firms must either improve or face eventual elimination from the market. Thus, the successful business firm is highly sensitive to customer exit.

Whereas exit is an economic action, voice is more a political phenomenon. The voicing customer does not rely on the market to improve his or her position. Instead, voice is an attempt by the customer to change the practices, policies, or offerings of the firm and to seek

some form of remedy. In Hirschman's terms, exit is essentially an escape from an objectionable state of affairs and voice is an attempt to accomplish change. However, for competitive business firms, exit is clearly the dominant customer response to dissatisfaction. Voice is an underdeveloped mechanism, particularly for packaged goods. Only one of 50 dissatisfied packaged goods customers has been reported to voice (Nielsen 1981).

Hirschman was concerned with the optimal mix of exit and voice, but concluded that an optimum does not exist for there is always a deficiency in either exit or voice. Hence it is unlikely that one could specify an efficient mix of the two that would be stable over time. In other words, management will strive to weaken the weapons their customers wield, be they exit or voice. For example, competitive firms that are normally sensitive to exit can learn to play a cooperative game in which they take each other's dissatisfied customers (cf. the American automobile industry before the Japanese "invasion"). Our analysis shows that it is usually desirable for firms to employ resources designed to increase voice. To understand why, let us begin by considering the interaction between exit and voice.

According to Hirschman, any one firm always has a combination of "alert" and "inert" customers; only the former will resort directly to exit when they experience a deterioration in the offering by the firm (or when the product/service does not match their expectations). The "inert" or nonexiting customers are the source of voice. There is some probability greater than zero that each nonexiting customer will voice and either postpone exit or not exit at all. Both exit and voice are affected by market structure in such a way that the level of voice is greater in markets with more monopoly power because of less opportunity for exit. At the extreme is the theoretical construct of pure monopoly with no alternatives open to the customer and thus no, or very little, exit opportunity.

Let us now introduce the notation (summarized in Table 1) and formally describe the interplay between exit and voice. Let a fraction  $\beta$  of  $M$  customers receive something they consider less than satisfactory. A fraction of these customers,  $1 - p$ , will exit (e.g., switch brands, change patronage, stop buying, etc.);  $p\beta M$  customers will voice (i.e., complain) and a fraction  $q$  of  $p$  will decide to remain loyal. The net result is an exit of  $\beta M [1 - p + p(1 - q)] = \beta M(1 - pq)$  customers. For a given value of the net present value of all future profits per retained customer, the firm's cost of exit is proportional to  $\beta M(1 - pq)$ . Clearly the firm should attempt to prevent customer exit, because exit implies a direct revenue loss. It is equally clear, albeit less obvious, that the firm should seek to encourage voice. Voice does not involve revenue losses; instead it gives the firm a chance at recovery by resolving the customer's problem. If the firm can do this successfully,  $q$  (customer retention) increases and  $\beta M(1 - pq)$  (the number of exiting customers) decreases.

Any effort to increase voice and reduce exit will entail

Table 1  
SYMBOLS USED

Symbol	Definition
$\beta$	Fraction of consumers who become dissatisfied
$M$	Number of consumers
$p$	Fraction of dissatisfied customers who voice
$q$	Fraction of voicing customers who do not switch
$t$	Time
$s$	Market share
$A$	Advertising
$m$	Contribution margin
$c$	Compensation to customers who complain
$n$	Number of firms
$b$	Cost of setting up complaint management system
$v$	Fraction of complaining customers who do not have valid claim
$I$	Average cost of investigating a complaint
*	Equilibrium
—	Steady state
$\wedge$	Disequilibrium

costs. Therefore the firm is unlikely to want to eliminate all exit. The optimal effort to encourage voice depends on a rather delicate balance among several forces. Let us now analyze this problem formally, that is, determine the optimal effort of a firm trying to maximize customer retention  $\beta M p q$  (or minimize exit  $\beta M (1 - p q)$ ), net the costs of (1) attracting voice and (2) customer compensation.

### THE MODEL

We use a market share attraction model (Beckwith 1973; Naert and Bultez 1973) in a duopoly (the extension to the  $n$ -firm case is discussed subsequently). Following Smallwood and Conlisk (1979) and Schmalensee (1978), we let all exiting customers enter a pool of "weakly dissatisfied" consumers. The members of this pool next buy from a given firm with a probability equal to that firm's share of the total marketing offense in the industry. Other buyers remain faithful to their past supplier.

We begin our analysis by considering the case in which no firm encourages customer voice. That is, no firm has a deliberate strategy or a formal mechanism for attracting customer complaints and reducing customer exit. This case is our baseline condition. Next, we consider the case in which one firm attempts to maximize customer retention. Finally, we consider the situation in which all firms engage in this type of defensive marketing strategy and what the optimal customer compensation level should be.

#### Symmetric Case—No Defensive Strategy

The baseline case is probably a reasonable approximation of many industries today. Here, no firm is actively attempting to increase or encourage customer complaints. Instead, complaints are seen as negative and undesirable. Empirical findings suggest many firms try to minimize or reduce complaint volume instead of trying to maximize or increase it (Fornell and Westbrook 1984).

One reason is the often faulty inference drawn from changes in complaint volume. That is, low levels of complaints are interpreted as evidence of customer satisfaction and are rewarded as such (Ross and Gardner 1985). The possibility that there may be many dissatisfied customers who do not complain is not considered.

We begin by analyzing a duopoly with firms 1 and 2, which together serve  $M$  customers, each of whom buys one unit per period of time. Each unit produced is found unsatisfactory with probability  $\beta$  and the firms have market shares  $s_1(t)$  and  $1 - s_1(t) = s_2(t)$ , respectively, in time period  $t$ . For simplification, let us assume all promotional and offensive expenditures can be captured in one term,  $A$ , which we call "advertising." (Though most types of advertising and sales promotion probably are designed for offensive marketing, we realize that some may have defensive objectives as well).

In such a situation, if all consumers stay in the market, the market share dynamics are characterized by

$$(1) \quad s_1(t+1) = (1 - \beta) s_1(t) + \beta A_1(t) [A_1(t) + A_2(t)]^{-1}.$$

If the firms advertise at constant levels,  $A_1$  and  $A_2$ , the market shares will converge to the steady-state level,

$$(2) \quad \bar{s}_1(A_1) = A_1 [A_1 + A_2]^{-1}.$$

Still striving for expositional simplicity, we confine the analysis to steady-state Nash equilibria in which each firm maximizes its (undiscounted) profit per period. That is, firm  $i$  wishes to maximize

$$(3) \quad \bar{\Pi}_i(A_i) = m \bar{s}_i(A_i) M - A_i, \quad i = 1, 2,$$

where  $m$  is the contribution per unit sold. As usual, we can find the equilibrium advertising levels  $A_1$  and  $A_2$  ( $A_i^* = A_2^* = mM/4$ ) from the first-order conditions.

In equilibrium:

$$(4) \quad \bar{s}_i(A_i^*) = 1/2, \quad i = 1, 2,$$

and

$$(5) \quad \bar{\Pi}_i(A_i^*) = mM/4, \quad i = 1, 2.$$

The duopolists split the market evenly and profits are proportional to the sales ( $M/2$ ) and the contribution per unit sold ( $m$ ).

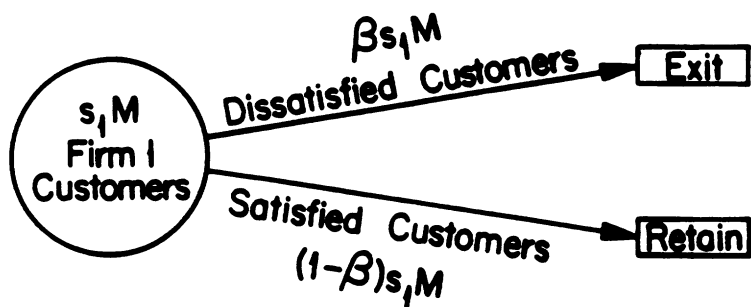
#### Nonsymmetric Case—Firm 1 Uses Defensive Strategy

Suppose now that firm 1 decides to use defensive strategy. That is, it sets up a customer affairs department to encourage its dissatisfied customers to voice their complaints. The firm also offers the complainants some form of remedy. Let  $b$  be the (fixed) cost of establishing, staffing, and promoting the new department and let  $p$  represent the fraction of the dissatisfied customers who now decide to voice. Further, let  $c$  be the average compensation the firm pays complaining customers and express the probability that a voicing customer remains with the firm as a function of the compensation  $q(c)$ .

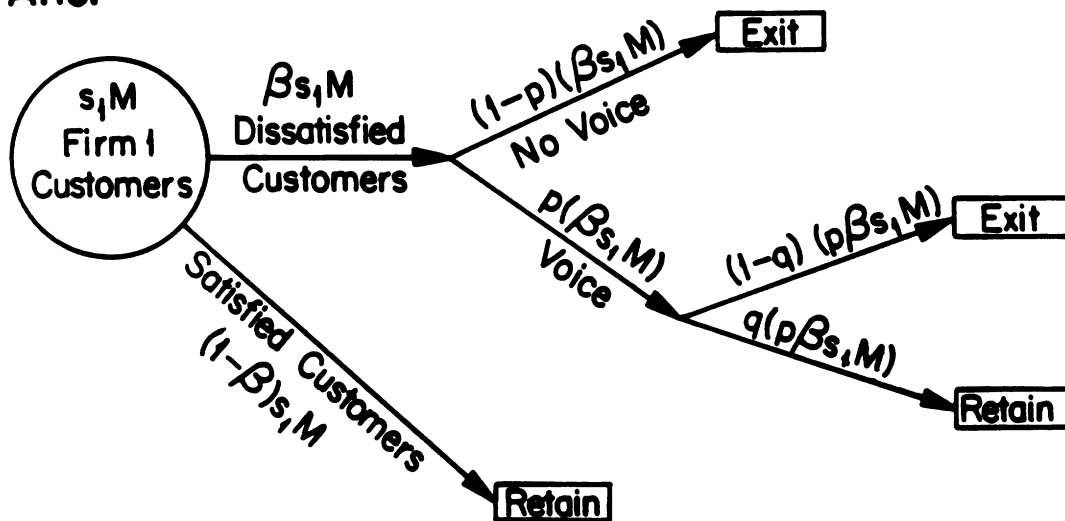
The implication of firm 1's new defensive strategy is diagrammed in Figure 1. In the notation introduced be-

Figure 1  
THE EFFECT OF COMPLAINT MANAGEMENT

Before:



After:



fore, the starting situation (before complaint management is initiated) is that  $\beta s_1 M$  customers exit and  $(1 - \beta)s_1 M$  remain loyal. For simplicity, we assume customers are either satisfied or dissatisfied and the latter will either exit or voice. Once firm 1 has developed a system for complaint management, the customer has more options and the effects on the firm are several. The dissatisfied customers may, as before, exit without voicing any complaints, but a fraction,  $p$ , will now decide to voice. All voicing customers will receive some form of compensation from the firm, which in turn results in the retention of  $q(p\beta s_1 M)$  customers. The number of exiting customers now has been reduced to  $\beta[1 - pq(c)]s_1 M$ .

In this case the pool of dissatisfied consumers at time  $t$  is given by  $M[\beta(1 - pq)s_1(t - 1) + \beta s_2(t - 1)]$ . Using  $s_1 = 1 - s_2$ , we can write the market share dynamics as

$$(6) \quad s_1(t + 1) = [1 - \beta(1 - pq)]s_1(t) + [\beta(1 - pq)s_1(t) + \beta(1 - s_1(t))]A_1[A_1(t) + A_2(t)]^{-1}$$

such that new steady-state market shares are given by

$$(7) \quad \bar{s}_1(A_1, c) = A_1[A_1 + A_2(1 - pq(c))]^{-1}$$

$$(8) \quad \bar{s}_2(A_2) = A_2(1 - pq(c))[A_1 + A_2(1 - pq(c))]^{-1}.$$

The net effectiveness of firm 2's advertising has decreased by a factor of  $(1 - pq(c))$ . To interpret this outcome, recall that  $pq$  is the fraction of firm 1's dissatisfied customers who voice and ultimately stay with the firm. Firm 2's advertising therefore can pull only the residual fraction  $(1 - pq)$ . We thus see that by inhibiting propensity for exit, *complaint management can defend against the advertising offense of competitors*.

If both firms continue to advertise at the same level  $A$ , the market share of firm 1 increases from  $1/2$  to  $A[A + A(1 - pq)]^{-1} = (2 - pq)^{-1}$ , whereas firm 2 obtains only  $1 - (2 - pq)^{-1} = (1 - pq)/(2 - pq)$ . Alternatively, firm 1 can reduce its advertising and still maintain a market share of  $1/2$ . In particular, assume firm 2 advertises at the level  $mM/4$ , which is optimal if neither firm uses defensive strategy. If firm 1 wants a market share of  $1/2$ , it must spend an amount  $\hat{A}_1$  given by

$$(9) \quad \hat{A}_1[\hat{A}_1 + (1 - pq)mM/4]^{-1} = 1/2.$$

One can verify that  $\hat{A}_1 = (1 - pq)mM/4$ , such that firm 1's profits are  $\hat{\Pi}_1(\hat{A}_1) = M(m - 2p\beta c + mpq)/4 - b$ . Thus, *complaint management enables a firm to advertise less than its competitors*, though its net contribution margin goes down from  $m$  to  $m - p\beta c$ .

Alternatively, we can consider the case in which the firms choose advertising and compensation optimally, given the assumed asymmetry in complaint management. An explicit expression for the Nash equilibrium is not forthcoming without assuming a specific form of  $q(c_1)$ . The first-order conditions

$$(m - p\beta c_1)MA_2^*(1 - pq)[A_1^* + A_2^*(1 - pq)]^{-2} - 1 = 0$$

$$mMA_1^*(1 - pq)[A_1^* + A_2^*(1 - pq)]^{-2} - 1 = 0$$

do, however, enable us to find

$$(10) \quad A_1^*/A_2^* = (m - p\beta c_1)/m.$$

As one would expect, the relative levels of advertising are equal to the relative levels of the net contribution margins. In equilibrium, the firm with greater retention will advertise less, not because of the greater retention but because of its lower unit margin.

The first-order condition on  $c_1^*$  is

$$-\beta + (m - p\beta c_1^*)A_2[A_1 + A_2(1 - pq^*)]^{-1} dq/dc_1 = 0,$$

which gives

$$dq/dc_1 = \beta[A_1 + A_2(1 - pq^*)](m - p\beta c_1^*)^{-1}A_2^{-1}.$$

Using the first-order condition on  $A_1^*$ , we obtain

$$(11) \quad dq/dc_1 = \beta M(1 - pq^*)[A_1^* + A_2^*(1 - pq^*)]^{-1} \\ = \beta M(1 - \bar{s}_1)/A_2^*.$$

If we use the implicit function theorem on the first-order conditions, we can show that  $c^*$  is larger if  $m$  and  $M$  also are larger and  $\beta$  is smaller. The effect of  $p$  is ambiguous. Hence, *ceteris paribus*, it is more tempting to offer high levels of compensation (giving low  $dq/dc$ ) if only a few units of the product are unsatisfactory and the market is large and highly profitable.

#### Symmetric Case—Both Firms Use Defensive Strategy

Let us now examine the case in which both firms engage in complaint management (in the sense of attempting to attract complaints), giving compensation of  $c_1$  and  $c_2$ , respectively. The market share dynamics are now

$$(12) \quad s_1(t + 1) = [1 - \beta(1 - pq(c_1))]s_1(t) \\ + [\beta(1 - pq(c_1))s_1(t) \\ + \beta(1 - pq(c_2))(1 - s_1(t))] \\ A_1(t)[A_1(t) + A_2(t)]^{-1}$$

such that the steady-state market share of firm 1 is

$$(13) \quad \bar{s}_1(A_1, c_1) = \frac{A_1[1 - pq(c_2)]}{A_1[1 - pq(c_2)] + A_2[1 - pq(c_1)]},$$

so the share of firm 1 will rise as firm 2 is less successful in preventing its dissatisfied voicing customers from switching. We now can show that the optimal compensation can exceed the product's profit margin. The profit to firm  $i$  is given by

$$(14) \quad \Pi_i(A_i, c_i) = (m - p\beta c_i)\bar{s}_i(A_i, c_i)M - A_i - b, \quad i = 1, 2.$$

Further, the equilibrium levels of advertising and compensation can be found from the first-order conditions

$$-\beta + (m - p\beta c^*)A_2^* \\ \cdot [A_1^*(1 - pq_2^*) + A_2^*(1 - pq_1^*)]^{-1} dq/dc = 0$$

$$(m - p\beta c^*)A_2^*(1 - pq_1^*)(1 - pq_2^*) \\ \cdot [A_1^*(1 - pq_2^*) + A_2^*(1 - pq_1^*)]^{-2} - 1 = 0$$

and the fact that the equilibrium is symmetric. We find

$$(15) \quad A_1^* = A_2^* = (m - p\beta c^*)M/4$$

and

$$(16) \quad c_1^* = c_2^* = m/(\beta p) - [1 - pq(c^*)]2/(pq')$$

where:

$$q' = \frac{dq}{dc}$$

So,  $s_1^*(A_1^*, c_1^*) = 1/2$ .

Hence the optimal level of compensation can exceed the unit contribution significantly. Recall that the first term in the expression for  $c^*$  is the expected number of future purchases a complaining customer will make until he or she again complains ( $1/(\beta)$ ), multiplied by the contribution per unit ( $m$ ). The second term shows how the firm should trade off the cost of compensation with its marginal efficiency. Again using the implicit function theorem, equation 16 shows that compensation rates should be especially high for the case in which few customers are dissatisfied ( $\beta$ ) and the product is highly profitable ( $m$ ).

#### Duopoly Illustration

Studies of corporate consumer affairs departments suggest a large majority of firms fail to see complaint management as an opportunity (Fornell and Westbrook 1984). Instead, with few exceptions, the handling of customer complaints is a relatively isolated affair within the firm. Further, complaints are regarded as negative information indicating deficient performance. As a result, their frequency is typically a target for reduction or minimization; most firms strive to lower the number of customer complaints.

To illustrate the counterproductiveness of the prevalent view, we use the typical case in which no firm attempts to maximize the number of complaints (from the pool of dissatisfied customers) and then show the benefits when a single firm reverses its policy on complaints. Thus, as shown in equations 6 through 8, we have

$$(17) \quad \text{new market share } (s) = (2 - pq)^{-1}.$$

To apply this formula, we need to know the fraction of dissatisfied customers who voice ( $p$ ) and the fraction of the voicing customers who remain loyal ( $q$ ). The most comprehensive data available were collected in a nationwide survey by Best and Andreasen (1977). They reported voicing rates and consumers' opinions of the firm's reply for a variety of product categories. Taking the average of all values reported by Best and Andreasen, we obtain  $p = .51$  and  $q = .76$ . Applying these values to the "average duopolist" who unilaterally introduces complaint management, we find its market share increases from .50 to .62.

Alternatively, the firm might want to maintain market share and reduce advertising expenditure. As shown in equation 9, advertising is reduced from  $mM/4$  to  $(1 -$

$pq(c))mM/4$ , which in this case is 39%. The increase in market share (or reduction in advertising) is not totally free of cost, of course. Total customer compensation cost is  $Ms_1\beta pc$ .

Let us now illustrate that the average customer compensation can well exceed the product's contribution to overhead. Again, we use the data from the study by Best and Andreasen, which also provide an estimate of  $\beta$ , the proportion of dissatisfied customers. Calculating the grand mean for all product categories examined by Best and Andreasen, we obtain  $\beta = .102$ .

For illustration, let us work with an advertising budget of \$1 million and calculate the effect on profits if we let the average customer compensation be twice the product's contribution margin. Recall that the equilibrium advertising expenditure is  $A_i = Mm/4$ . With an advertising expenditure of \$1 million, we have  $Mm = \$4$  million. Inserting  $p = .51$ ,  $\beta = .102$ ,  $s_1 = .50$ ,  $Mm = \$4$  million, and  $c = 2m$ , we obtain a customer compensation cost of

$$(\$4,000,000)(.5)(.102)(.51)(2) = \$208,080$$

and, as already shown, a reduction in advertising by  $(.39)(\$1,000,000) = \$390,000$ . Thus, in this example, the company that unilaterally pursues defensive strategy in the form of complaint management would be able to maintain its current market share by shifting 21% (\$208,080) of its marketing effort from offense to defense, give very generous customer compensation (twice the product margin), and increase profit by  $\$390,000 - \$208,080 = \$181,920$  (minus the fixed costs of complaint management).

Obviously, "the average duopolist" depicted here does not exist in reality. Nevertheless, the example provides some insight into how dramatic the effects of complaint management can be and how high the compensation to complainants can go. To add a little more perspective, let us now consider an industry where  $n > 2$ . In other words, our model now extends beyond the duopoly.

#### The Oligopoly Case

To examine the effects of competition on complaint management, we note that each firm has a market share of  $1/n$  in a symmetric  $n$ -firm oligopoly. If, as before, firm 1 alone introduces complaint management, its market share will increase to  $[n - (n - 1)pq]^{-1}$  (assuming advertising is maintained at the original level). The relative gain in market share is thus  $n[n - (n - 1)pq]^{-1} - 1$ , which, by differentiation, is seen to be increasing in  $n$ . So the advantages of complaint management, *ceteris paribus*, will be greater in more competitive industries. However,  $p$  and  $q$  are probably lower in more competitive industries simply because consumers have more alternatives. In addition, the more competitive the industry, the more difficult it will be to increase  $p$ .

#### Oligopoly Illustration

Let us now bring the analysis closer to a typical marketing context in which the focus is on a single firm and



competitors have different market shares and levels of marketing effort. The  $n$  firms are characterized by  $\beta_1, \dots, \beta_n$  and  $A_1, \dots, A_n$ . The market share dynamics are

$$s_i(t+1) = (1 - \beta_i)s_i(t) + \left[ \sum_{j=1}^n \beta_j s_j(t) \right] A_i(t) \left[ \sum_{j=1}^n A_j(t) \right]^{-1}, \quad i = 1, \dots, n,$$

giving steady-state shares of

$$(18) \quad \bar{s}_i = A_i / \beta_i \left[ \sum_{j=1}^n (A_j / \beta_j) \right]^{-1}, \quad i = 1, \dots, n.$$

In a Nash equilibrium the  $A$ 's are chosen such that

$$(19) \quad \bar{s}_i = 1 - \beta_i (mM)^{-1} \sum_{j=1}^n (A_j^* / \beta_j), \quad i = 1, \dots, n.$$

Using  $\sum_{j=1}^n \bar{s}_j = 1$ , we obtain

$$(20) \quad \bar{s}_i = 1 - \beta_i (n-1) \left( \sum_{j=1}^n \beta_j \right)^{-1}, \quad i = 1, \dots, n,$$

or

$$(21) \quad (1 - \bar{s}_i)(n-2 + \bar{s}_i)^{-1} = \beta_i \left( \sum_{j \neq i}^n \beta_j \right)^{-1}, \quad i = 1, \dots, n.$$

Accordingly, if firm  $i$  introduces complaint management and advertising levels adjust, the new market share will obey

$$(22) \quad (1 - \hat{s}_i)(n-2 + \hat{s}_i)^{-1} = (1 - pq)\beta_i \left( \sum_{j \neq i}^n \beta_j \right)^{-1} \\ = (1 - pq)(1 - s_i)(n-2 + s_i)^{-1}$$

or

$$(23) \quad \hat{s}_i = [s_i(n-1) + (1 - s_i)pq(n-2)] \\ [n-1 - (1 - s_i)pq]^{-1}.$$

Let us now illustrate the analysis for a manufacturer of automobiles. To be more specific, let us focus on a product that competes in the midsized car market. Its market share ( $s$ ) is .169 and its advertising expenditure ( $A$ ) totals \$25 million. There are a total of 16 competitors ( $n$ ) in the market for midsized cars. It has been estimated (by the company) that the voice (complaint) fraction ( $p$ ) is .47 and that the loyalty fraction after voice ( $q$ ) may be .30. If this firm unilaterally introduces complaint management and advertising adjusts to the Nash equilibrium level, its market share will increase to

$$\hat{s}_i = [.169(16-1) + (1 - .169)(.47)(.30)(16-2)] \\ [16-1 - (1 - .169)(.47)(.30)]^{-1} = .280.$$

Thus, the firm stands to increase market share from .169 to .280. As in our preceding illustration, the firm may want to maintain market share and reduce advertising. In this case the savings in advertising would be 14.1% (.47  $\times$  .30) or \$3.525 million. Recall that this outcome

would occur only in the very long run (Nash equilibrium) and if no other competitor in this market pursues defensive strategy in the way we have described it. If a firm engages in complaint maximization from dissatisfied customers (by liberal compensation policies, 800 numbers, quick and competent complaint processing, etc.) and reaps large returns, one would expect competitors to begin a similar strategy. Nevertheless, many, if not most, business firms still pursue the objective of complaint minimization without much consideration to the opportunity cost of not receiving a complaint (Fornell 1987; Fornell and Westbrook 1984; Ross and Gardner 1985; TARP 1986).

### DISCUSSION AND SUMMARY

From the exit-voice theory of Hirschman (1970), we develop a formal model of the effects of complaint management as a tool of defensive marketing. Though intuitive reasoning might suggest effective competitive strategy involves *both* offensive (obtaining new customers) and defensive (retaining present customers) marketing, several of the implications of our model are, if not counterintuitive, certainly contradictory to common practice (cf. Fornell and Westbrook 1984). For example, it is easy to understand that the attractiveness of defensive strategy increases with maturing industries, low-growth markets, and intense competition, but to suggest that customer complaints should be maximized or that firms can afford to be very generous in providing remedy to complainants may need some explanation.

Basically, our model suggests an opportunity cost is associated with "unvoiced" complaints. In a competitive environment, the dissatisfied customer who does not complain is more likely to exit (for empirical support of this point, see Fornell and Didow 1980). Exit implies a revenue loss; complaints imply a cost (in handling and encouraging complaints). Whenever the revenue loss is greater than the cost, if a sufficiently large proportion of the complainants can be persuaded to remain customers, complaints should be encouraged. One issue is just how much customer exit can be prevented by complaint management. This is an empirical question and the data available indicate that customer loyalty can be increased by encouraging customers to complain (Goodman and Malech 1985). In our illustrations, we use data from Best and Andreasen (1977) about complainants' opinions of business response (to the complaint) in forming a proxy for customer retention. Naturally, the retention ratio varies across industries and also among companies. We model it as a function of customer compensation. Clearly, this approach is a simplification and a limitation of our model, which does not extend to the micro level. For a development of a micro model, we refer to Fornell and Wernefelt (1986).

In the general case of oligopoly, compensation could be very liberal and in our particular example it could exceed 200% of the profit margin. Basically, the amount of compensation depends on the worth of retaining a cus-

tomers and the likelihood that the complainant will be satisfied with the remedy and remain a customer. One would expect that for frequently purchased goods, in particular, the worth of a customer is much higher than the cost of the product complained about. As a result, not only is defensive marketing critical under these circumstances, but it may be profitable to compensate with an amount that is several times the profit margin of the product. Hence, the long-term perspective is important. A myopic tightening of corporate purse strings will almost certainly have a negative effect.

In conclusion, the results of our mathematical model, though perhaps puzzling at first, can be explained in terms of opportunity costs and customer worth. To demonstrate the effects of complaint management, we use voice ( $p$ ) and retention ( $q$ ) rates estimated from survey data. The assumption is that these estimates would result if defensive complaint management were introduced. In reality,  $p$  and  $q$  would rarely be zero, even without complaint management. Some customers complain—that is,  $p$  may be very high—even though complaints are not encouraged by the firm. In this sense, our illustrations might overstate the effect. However, if the firm does not encourage complaints and is not well equipped to cope with them, one would expect  $q$  to be very low. As a result, though a proportion of the dissatisfied buyers may complain, few will remain loyal customers.

Our illustrations show the effects of complaint management under different conditions, but should not be generalized. The effect, and thus the value to the firm, depends on the parameters of the model. These parameters must be estimated for each individual case as a basis for specific conclusions. For example, if  $\beta$ ,  $p$ , and  $q$  are found to be very low and  $c$  very high, complaint management will not be an attractive feature of the firm's defensive strategy. Nevertheless, the relatively large market share gains as a result of complaint management are not incompatible with the findings of the recent updated empirical study commissioned by the U.S. Office of Consumer Affairs (TARP 1986), which indicated that complaint management can be a significant profit center. Consistent with the findings of Fornell and Westbrook (1984), however, is the finding that many companies fail to use complaint management to its full potential by not linking it systematically to marketing strategy.

A possible limitation of our model is that it does not consider the possibility of customer abuse (e.g., generous compensation could generate "false" complaints). However, this problem probably is not serious because the firm can set up controls by requiring each complainant to justify the complaint with documentation and by investigating the claim. Such steps would add costs for the customer as well as the firm. Let us consider the cost to the firm and analyze the question of whether controls should be exercised. Let  $c$  be the compensation in dollars,  $v$  a fraction of the complaining customers who "cheat" (i.e., have invalid claims), and  $I$  the average cost of investigating the validity of complaints. A nec-

essary condition for imposing control (in terms of complaint investigation) is

$$(24) \quad c > I + cv.$$

Unless the inequality holds, the firm would be better off *not* determining the validity of the complaints as a requirement for giving compensation. Typically, if the investigation costs and the proportion of valid complaints are high, investigation is not worthwhile. For example, a firm in the automobile industry calculates the average compensation to be \$50. It investigates every complaint and finds that about 10% of the complainants do not (for whatever reason) have a valid claim. On average, it costs the firm \$25 to find this out. On an annual basis the number of complaints processed is approximately 30,000. Consequently, the cost to the firm is

$$\begin{aligned} \text{Compensation} &= .9(30,000) \times \$50 = \$13.5 \text{ million,} \\ \text{Investigation cost} &= 30,000 \times \$25 = \$7.5 \text{ million.} \end{aligned}$$

If the firm decided to pay compensation without investigation, it would save \$6 million if the proportion of valid complaints remained the same. In fact, the proportion of invalid complaints could be as high as 50% before investigation becomes profitable. Most consumer affairs managers agree that about 80% of all complaints are generally valid (*Customer Service Newsletter* 1984). Hence, customer "cheating" does not appear to be a serious threat to the results of our analysis and firms are better off not investigating every complaint.

In conclusion, empirical evidence suggests that (1) a dissatisfied customer, once persuaded to stay, is more loyal and thus more valuable than before, (2) generous complaint management is likely to generate positive consumer word-of-mouth communications, and (3) consumer complaints can be useful sources of design ideas and quality control (Goodman and Malech 1985). These findings do not suggest that offensive marketing is less important. However, if pursued by competing firms, the long-term market share will depend on *both* offensive and defensive efforts. Both offensive and defensive approaches have many facets, but few of the latter have been studied in great detail. A major issue is the allocation of marketing effort between current customers (defense) and potential customers (offense). Our model shows that complaint management, as a part of the defense, can be used not only to increase market share but also to lower the cost of offensive marketing.

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