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A MODEL FOR CUSTOMER COMPLAINT MANAGEMENT

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A model of customer complaint management is developed in terms of defensive marketing strategy. Based on an explicit microfoundation, firms' incentives to manage complaints are analyzed. In the context of a monopoly and homogeneous oligopoly, we discuss the optimal levels of customer compensation and effort and characterize industries where complaint management is likely to be used. We then examine a differentiated oligopoly and find an explicit formula for the market share gains associated with complaint management. This is illustrated in an example with real data. We finally consider the trade-off between defensive strategy in the form of complaint management and various offensive marketing tools such as advertising and pricing.

(Complaints; Oligopoly; Repeat Purchase)

Introduction: Complaint Management as Defensive Marketing

Most successful business firms employ offensive as well as defensive marketing strategies. The objective of the offense is to generate new customers; the objective of the defense is to keep current customers. With few exceptions (e.g., Hauser and Shugan 1983), the marketing literature has basically been concerned with the former. Less attention has been devoted to the defense. This is not to suggest that defensive strategy is not treated in the literature. There is a long tradition in economics dealing with defensive oligopolies (Caves and Porter 1977) which includes attempts to maintain sales volume (Bain 1956), and develop a reputation for toughness (Milgrom and Roberts 1982), in addition to discussing preemptive investments (Spence 1977). Most of the research on issues of defense, including Hauser and Shugan's, deals with attempts to fend off new entry or to discourage new entry. In other words, the focus is essentially on competition. Our approach is different in that the notion of defense focuses on the consumer. Defensive strategy in this sense is concerned with reducing customer turnover or patronage switching. Obviously, this type of defensive marketing becomes essential whenever the cost of generating a new customer is high relative to the cost of retaining a current customer (as is the case in many mature and/or stagnating industries where competition is fierce). For example, Volvo, the Swedish automobile manufacturer, estimates that its cost of generating a new customer is three times the cost of retaining a present customer.

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Successful marketing strategy almost certainly must include a blend of offense and defense, but very little research has addressed the problem of resource allocation between them. In fact, we know of only two papers in this area: Gensch's (1984) and Fornell and Wernerfelt's (1987). In the latter paper, we use Hirschman's (1970) exit-voice theory to postulate aggregate market share dynamics within which we can analyze the trade-off between advertising and complaint management. In the present paper we derive the market share dynamics from an explicit micro-foundation of utility maximizing consumers. We then use this to examine the characteristics of optimal complaint management systems and the market structures under which they are most valuable.

Specifically, we focus on the problem that occurs when the firm fails to provide customer satisfaction (for whatever reason). Are the dissatisfied customers lost to the firm or (at what cost) can they be retained? Surprisingly enough, a large-scale recent study (by the Office of the Special Advisor to the President for Consumer Affairs and members of the U.S. Consumer Affairs Council) reports a very strong relationship between complaints from dissatisfied customers and these customers' subsequent brand loyalty (especially, but not necessarily when the complaint was satisfactorily resolved).[1] A basic finding was that dissatisfied complainants had higher levels of brand loyalty than noncomplainants. In view of findings such as these, many firms showed extremely high returns on their investment in complaint management. For example, some banks had a return of 170 percent, some firms in the packaged goods industry area 75 percent, while some retailing firms reported a return on investment as high as 400 percent.

What lies behind these figures? That is the issue we address in this paper. We analyze complaint processing as a defensive tool: how to manage grievances from current customers in such a way that the dissatisfied customer does not desert the firm. We think of complaint management as a system, set up by the firm, that offers an opportunity for customers to have their grievances resolved. Naturally, complaint resolution is typically associated with some cost on the part of the firm. A part of this cost can be thought of as customer compensation (regardless of the form it takes, e.g., money back, repair services, information, etc.).

This type of system can affect sales in several ways. It can increase the expected utility of purchase, it can reduce buyer risk, it can signal quality, and it can impact sales via word-of-mouth (General Electric 1982; TARP 1981). We will highlight the effect on ex ante expected utility and show that even if consumers are risk neutral, signalling is infeasible and word-of-mouth effects are negligible it is, nevertheless, in the interest of the firm to (a) attract complaints from dissatisfied customers and (b) compensate generously.

Most economics-based analyses are positive. A model is solved under assumptions of rationality and the outcome is predicted to hold in the "real" world. In the present case, we depart from this tradition. Based on the empirical literature (Fornell and Westbrook 1984; Fornell 1976), it assumes that many firms do not use complaint management optimally. Accordingly, our analysis has a normative flavor. We conclude that complaint management can be a very powerful competitive weapon and firms may not be aware of it. In analyzing the optimal level of customer compensation, we find that more resources should go into complaint management for products that are highly profitable and of high quality. We also develop an equation for market share gains resulting from complaint management. It is found that the effects are greatest in concentrated industries.

[1] See TARP Institute (March 31, 1986), "Consumer Complaint Handling in America: An Update Study," Contract HHS-100-84-0065, Washington, D.C.

Our analysis is related to the economics literature on warranties but covers a somewhat different and more general topic. In the next section we will define complaint management and contrast it to warranties and guarantees. In building our formal model, we take care to focus on the unique aspects of complaint management, as opposed to the properties it shares with warranties. After an introduction to the model, we consider the monopoly case and examine the advantages of having complaint management at all. The same questions are analyzed in a homogeneous oligopoly. Finally, we consider the case of a differentiated oligopoly and the market share gains for a typical firm that introduces complaint management. This is illustrated with data from five industries.

Complaint Management Defined

Before we turn to the analysis, let us define what we mean by complaint management. This can be done by contrasting it to warranties and guarantees. A warranty is a limited provision which usually states that a product, if covered, will be brought to working order at the expense of the seller. Complaint management is a more general undertaking. First, complaining consumers may receive different levels of compensation—not exactly what it takes to bring the product back to working order. We will see the logic behind this in the model. For now, it is important to note that this allows firms to use complaint management for services as well as products. Second, an important element of complaint management is efforts to facilitate voicing of complaints. This will be part of our model also. One of the most visible signs that many firms are using to facilitate complaining is the installation of toll-free 800 numbers. It has been estimated that there are more than 200 million calls relating to customer problems annually and that 14 percent of these are complaints (TARP 1984). Third, while warranties and service contracts may be restricted to a subset of a firm's buyers, complaint management typically applies to all customers. Fourth, complaint management is often tied to efforts relating to quality improvement (a point that is beyond the scope of our model). For example, a major hotel chain is using complaints for quality control of individual outlets.

There are of course many issues to consider in setting up a complaint management function (e.g., responsibilities, activities, organizational relationships, complaint processing methodology, etc.). Many of these issues are discussed in Hansen and Schoenheit 1986; Fornell 1976, 1987; Fornell and Westbrook 1984; and TARP 1986. From this literature it is clear that complaint management is much more than warranties and guarantees although these are often important parts of the complaint management function.

Model Fundamentals

Because complaint management can be viewed as a general case of warranties, what we know about warranties will be (at least partially) true of complaint management as well. There is a large and quite sophisticated economics literature on warranties and we will here try to avoid replicating its results in order to focus on the specific properties of complaint management. To explain how, it is useful to briefly review the literature on warranties.

In a model with symmetric information, risk neutral and homogeneous consumers and given product quality, warranties do not matter. It is irrelevant whether the firms or the consumer carry the cost, price will adjust accordingly. In more complex models, things change. First, if firms have better information about quality, a warranty may be used as a signal (Spence 1977). Second, if consumers are risk averse, it is better for the firm to offer a warranty (Heal 1977). Third, if consumers are heterogeneous, different

price-warranty bundles can be used to price discriminate, both in monopoly (Adams and Yellin 1976; Matthews and Moore 1987) or in competition (Rothschild and Stiglitz 1976). Fourth, if quality is endogenous, firms can use warranties to credibly bond themselves to high quality production (Grossman 1983; Courville and Hausman 1977; Oi 1973).

All these effects may occur with complaint management also. In order to focus on the specific aspects of complaint management, we make assumptions to avoid the above issues. In particular, it is assumed that neither firms nor consumers ex ante know the quality of the product, that consumers are risk neutral, and that quality is given. We do not claim that these are realistic assumptions, but, as we will discuss, the effects of relaxing them can be analyzed. Further, they are common in the literature, allowing the analysis to be simple and focused without compromising rigor.

It should be noted that we allow for heterogeneous consumers. However, we will assume that the firms do not price discriminate. That is, we will focus on pooling equilibria where all consumers are offered the same price. With heterogeneous consumers it is possible to get separating equilibria where different bundles are offered to different groups of consumers (Moorthy 1985; Tellis and Wernerfelt 1987), although this is not necessarily optimal. To keep the model simple, we abstract from price competition and assume an exogenously given price. Although it is not in the model, tacit collusion could go part of the way towards justifying this, at least in the oligopoly case (Schmalensee 1976).

To facilitate the exposition, we will start with a monopoly model, move on to an oligopoly, and finally to a differentiated market. We will show that complaint management pays, in general, and we will characterize circumstances under which it pays more. However, outside of the monopoly sphere, a firm is hurt by competitors' complaint management and, as a group, industry participants are better off if they can tacitly agree to forego it.

Monopoly

Consider a monopolist who offers a product to the same group of consumers in periods 1 and 2. The technology is either "perfect," in which case all units work or it is "imperfect," in which case only a fraction, θ, works. (A list of symbols is given after the body of the paper.) The monopolist and consumers who receive defective units learn the quality of the technology in period 1 (so consumers only learn about their own experiences). Before that, the common belief is that the technology is perfect with probability η. The firm can, at a fixed cost $g(c)$, set up a complaint management system such that consumers can obtain compensation v, while incurring a maximum cost c in the process of complaining. We assume that it is costly to facilitate complaints ($g' < 0$), and that this increases at an increasing rate and eventually gets prohibitively high ($cg'' > -2g'$). For simplicity we abstract from discounting and assume that the firm charges the same exogenous price and offers the same v in both periods.[2]

There is a unit mass of risk neutral consumers, each of whom buys one unit of the product in each period. If the product works, the consumer utility is u, and if it is defective an extra cost of bf is incurred, while it costs ac to complain (money, time, effort, etc.). So a and b are the individual difference parameters, with a reflecting the cost of complaining and b the costs of receiving a defective product. For convenience, we assume that (a, b) has a rectangular distribution on $[0, 1]^2$. To keep things simple we further assume that the product has to be returned to the firm in order to obtain

[2] The model is carefully rigged to avoid the use of signalling. If the firm knows its quality with more than one period to go or before it sets compensation levels, the possibility of credible signalling appears. See Milgrom and Roberts (1986) for ideas of this type.

compensation and that u, η and θ are sufficiently large, such that all consumers will buy in the first period, even without complaint management.[3]

Summarizing, we assume:

(a) All consumers derive the same utility, u, from a unit of the product if it is not defective. Both the firm and the consumers initially believe that all units will work with probability η, with complementary probability that only a fraction, θ, of the units work. The maximum cost of receiving a defective product is f.

(b) The firm can, at a fixed cost $g(c)$ and a variable cost x, set up a complaint management system in which the maximum cost of complaining is c and any complaining consumer is paid v.

(c) All consumers buy in the first period. Their costs of getting a defective product (b) and complaining (a) are uniformly distributed over the unit line.

(d) Consumers who receive a defective product in the first period decide whether or not to complain and whether or not to buy again.

Given the above, if a consumer receives a defective product, he will complain iff $v - ac > u - bf$ and buy in a following period iff $\theta u + (1 - \theta)$ Max $\{v - ac, u - bf\} > 0$, that is, we can divide the a, b plane into four segments depending on whether consumers complain and/or keep buying. This is illustrated in Figure 1 for the case where $c(1 - \theta) > f(1 - \theta) > u > v$. Under other assumptions the segments are different and some may be empty. For simplicity, we confine analysis to the above case. Nevertheless, the intuition behind our results is quite robust, an issue to which we will return.

To interpret the figure, note that the diagonal line comes from the complaint inequality, while the horizontal and vertical lines come from the repurchase inequality. Given this, consider first segment γ. These are quality sensitive consumers (b is high) who continue to buy after receiving a defective product because they find it inexpensive to obtain compensation (a is low). The β segment, on the other hand, finds complaining to be in their interest but it is too costly for them to remain customers of the firm. The α segment also consists of consumers who desert the firm and for whom complaining is not optimal. The final segment $(1 - \alpha - \beta - \gamma)$ consists of those for whom quality is not important enough to justify complaining.

A firm with perfect technology will sell to all consumers in both periods and will receive no complaints. A firm with imperfect technology will not sell to those consumers in the α and β segments who received defective products in period 1. This firm loses sales of $(1 - \theta)(\alpha + \beta)$ in period 2—and thus obtain total sales of $2 - (1 - \theta)(\alpha + \beta)$. It receives complaints from $(1 - \theta)$ of those in the β and γ segment in period 1, $(1 - \theta)$ of those in the γ segment in period 2, plus those in the β segment who receive a defective product in the second period only. Thus, complaints total $(1 - \theta)(\beta + \gamma) + (1 - \theta)\gamma + \theta(1 - \theta)\beta$. Therefore, ex ante expected sales are given by $2\eta + (1 - \eta)[2 - (1 - \theta)(\alpha + \beta)]$ and the expected number of complaints is $(1 - \eta)[\beta(1 - \theta^2) + \gamma 2(1 - \theta)]$. If the profit margin is m and honoring a complaint costs x over and above the compensation v to the complainant, total profits are

$$m2\eta + m(1 - \eta)[2 - (1 - \theta)(\alpha + \beta)] - (v + x)(1 - \eta)[\beta(1 - \theta^2) + \gamma 2(1 - \theta)] - g(c).$$

The first order condition for the optimal value of v, call it v^*, is

$$m(f - \theta f - u)/(1 - \theta) + \tfrac{1}{2}(f - \theta f - u)^2/(1 - \theta) - (f + v^* - u)^2 - (v + x)2(f + v^* - u) = 0,$$

[3] These assumptions are made for analytical convenience only. The same qualitative results will be obtained without them. Note that $v \leq u$ implies that no consumer will want to cheat and turn in a working product for a refund.

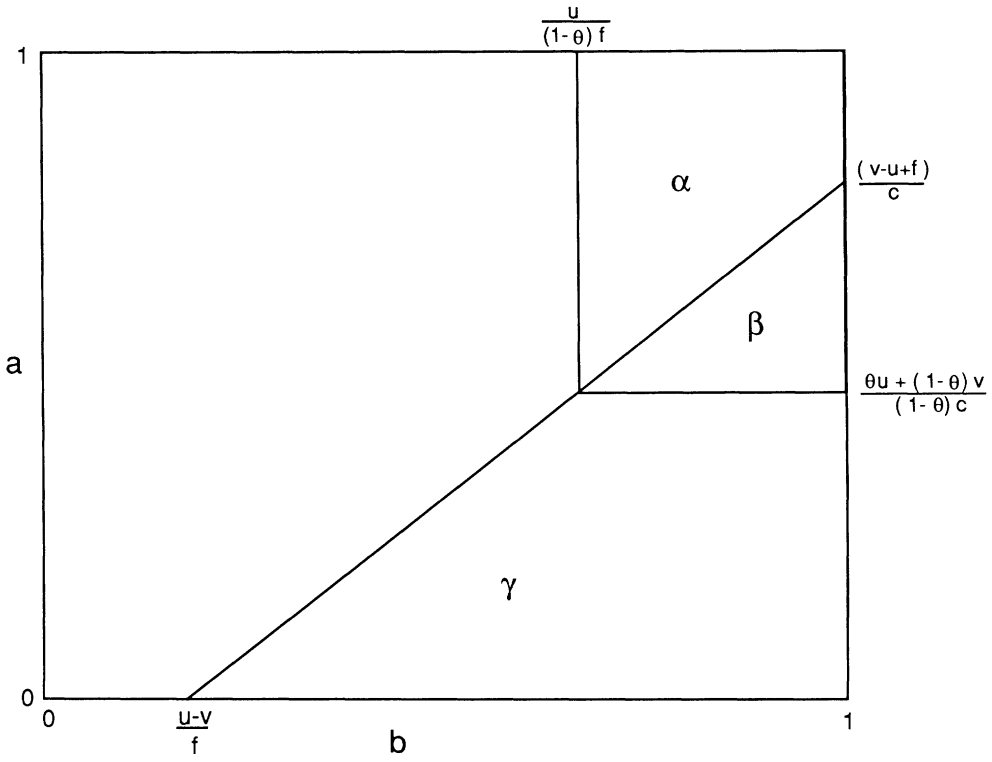

FIGURE 1. The Four Segments in the Monopoly Case.

while c^* is given by

$$-(v + x)(1 - \theta)[((1 - \theta)f - u)^2 - 2(1 - \theta)(f - u + v)^2]$$
$$- m[(1 - \theta)f - u][\theta u + (1 - \theta)v]2 - g'(c^*)fc^{*2}2(1 - \theta)/(1 - \eta) = 0.$$

Comparative static results can be derived from these two conditions. It is useful to note that the system is recursive, v^* is not influenced by c^*. The optimal compensation does not depend on the cost of complaining. By implicit differentiation we find that v^* is larger and c^* is smaller for bigger m, smaller x, and smaller θ. Consequently, compensation and the efforts to facilitate the voicing of complaints should be larger if the margin is high, compensation is inexpensive, consumers are quality sensitive, and the product is of high quality (quality being defined by θ).

We can furthermore compare profits at (v^*, c^*) with $m2\eta + m(1 - \eta)(1 + \theta + u(1 - \theta)^{-1}/f)$ which are the profits from not having a complaint management system. While this comparison is very tedious, the result is that the advantages of complaint management, ceteris paribus, tend to be larger for bigger m, smaller x, and bigger f. So we expect firms to use complaint management when margins are high, compensation is inexpensive and the cost of a defective product is high.

Homogeneous Oligopoly

Consider an n-firm oligopoly in which one firm (firm 1) offers an optimally designed complaint management system. If the product is homogeneous, that firm will obtain period 1 sales to all consumers who will complain if they receive a defective product (because these consumers have nothing to lose by buying from firm 1), plus $1/n$ of the rest of the market. The switching behavior is, however, different here. Consumers who

receive a defective product will continue to buy from firm 1 iff $\theta u + (1 - \theta)(v - ac) > u - (1 - \eta)(1 - \theta)bf$, that is, iff $v - ac > u - bf + \eta bf$. So in this case we have three segments as illustrated in Figure 2.

To interpret this figure, note that the top diagonal line comes from the complaint inequality, while the lower diagonal line comes from the repurchase inequality. Given this, consider first segment ψ, the analog of γ in the monopoly case. These are quality sensitive consumers who will continue to buy because the insurance inherent in the complaint management system is attractive for them. Similarly, the ψ segment corresponds to β in the monopoly case, except that these consumers now can switch instead of exiting the market. The $1 - \phi - \psi$ segment corresponds to the previous α. On the other hand, the segment which did not complain and continued to buy in the monopoly case does no longer exist. In the homogeneous oligopoly, the dissatisfied customer might as well switch after finding out that a firm has an "imperfect" technology. Even if the customer cares very little about quality, there is nothing to lose.

Let us use the symbols ϕ and ψ for the size of the segments which complain and switch and that which complains and stays with the firm, respectively. In the terminology of Albert O. Hirschman (1970), $1 - \phi - \psi$ is "exit," while $\phi + \psi$ is "voice," and ψ is the "loyal" segment. In this notation, ex ante expected profits for firm 1 are

$$[m2\eta + m(1 - \eta)(1 + \theta + (1 - \theta)\psi)] - (v + x)(1 - \eta)[\phi(1 - \theta^2) + 2\psi(1 - \theta)] - g(c).$$

As before, we can find the first order condition for v^* and c^* and use implicit differentiation to find the same results, that v^* is larger and c^* is smaller for larger m, smaller x, and smaller θ.

We can also here compare firm 1 profits at (v^*, c^*) with profits when no firm uses complaint management. In this case the profits per firm are $[m2\eta + m(1 - \eta)(1 + \theta + u(1 - \theta)^{-1}/f)]/n$. We find that the attractiveness of complaint management is higher

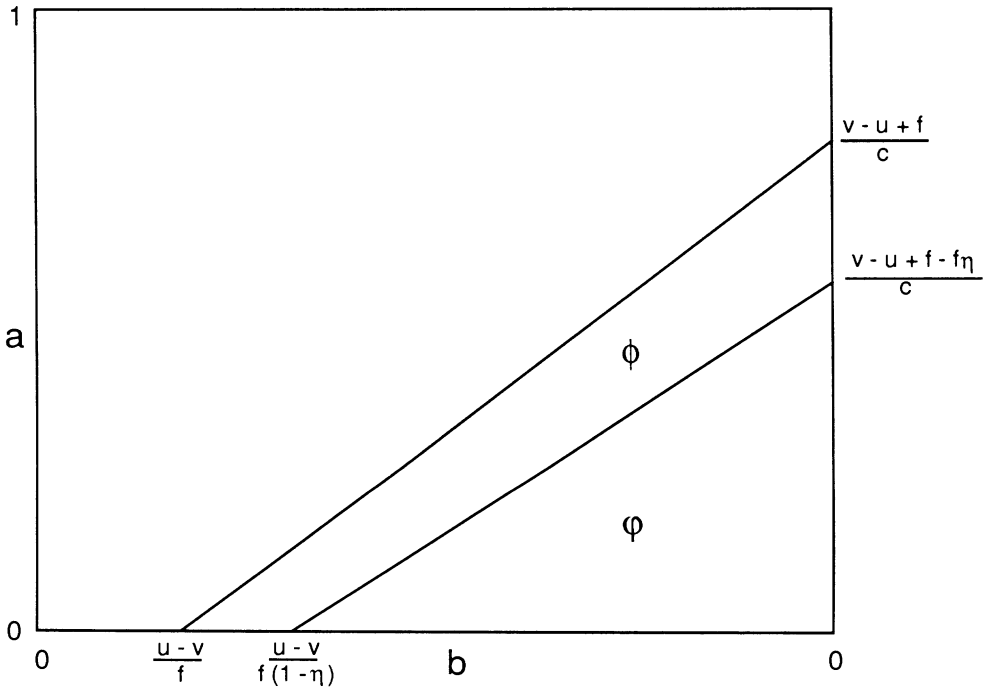

FIGURE 2. The Three Segments in the Oligopoly Case.

the larger n is—that is, the more fragmented the industry is (because one obtains customers from more competitors).

In order to complete the picture, we consider profits of firms which do not use complaint management when firm 1 or firm 1 through $n-1$ does. It is trivial to show that such firms benefit from starting their own complaint management systems. In this case all market shares go back to $1/n$ in period 1 and slightly more or less than that in period 2, depending on the quality of the firm's product. Thus, we have a Prisoner's Dilemma type payoff matrix when firms compete on complaint management rather than price. Each is better off by pursuing complaint management individually, but if they all do, all firms are worse off.

At this point it is important to note that this conclusion might weaken somewhat if we drop the assumption that prices are pooled in equilibrium. If some consumers prefer lower prices and no complaint management, then firm 1 will not obtain the whole market, but part of it. However, the general idea that introduction of a new competitive weapon forces most other firms to follow will be valid under most reasonable assumptions.

Differentiated Oligopoly

In a homogeneous oligopoly with perfect information, a firm can become a monopolist by offering consumers a slightly better deal. Because of this, the incentives for complaint management, lower prices, higher quality, etc., are very strong. In a more realistic setting, where consumers have different tastes or prefer variety, firms can offer differentiated products and mitigate competitive pressure. The resulting complaint and switching behavior is in between that of a monopoly and that of a homogeneous oligopoly.

There are many ways to model consumer demand in such markets, but the work of Spence (1976) is commonly used as a consistent microbase for the so-called market share attraction models (Bell, Keeney and Little 1975). In such models, each firm attracts unattached customers according to a weight, ω_i, such that $\sum_{i=1}^{n} \omega_i = 1$ for an n-firm oligopoly. Using this framework, we will now consider an oligopoly where all firms have imperfect products (although this is unknown ex ante, as specified in the previous sections). If a defective product causes a consumer to switch brands, we can find second period market shares, s_{2i}, as functions of first period shares, s_{1i}, from

$$s_{2i} = \theta s_{1i} + \sum_{j \neq i}^{n} (1-\theta) s_{1j} \omega_i \Big(\sum_{l \neq j}^{n} \omega_l\Big)^{-1}. \tag{1}$$

So if $s_{1i} = \omega_i = 1/n$ for all i, then $s_{2i} = 1/n$ also.

For large n, a good approximation to (1) is obtained by assuming that brand switchers get "weakly dissatisfied," in the sense that they first decide to stop patronizing their current supplier and then to choose among all suppliers according to the ω distribution. In other words (as in Schmalensee 1978; Smallwood and Conlisk 1979), they may in fact return to their old supplier. With this approximation, (1) becomes

$$s_{2i} = \theta s_{1i} + (1-\theta)\omega_i \tag{2}$$

so the steady state market share is equal to the attraction weight ω.

Assume now that firm 1 (and only firm 1) introduces a complaint management system. In this case, (2) changes to

$$s_{21} = (\theta + (1-\theta)\psi) s_{11} + (1-\theta)[(1-s_{11}) + (1-\psi)s_{11}]\omega_1$$

such that the steady state share goes to

$$\bar{s}_1 = \omega_1[1 - \psi + \psi\omega_1]^{-1} \tag{3}$$

TABLE 1
Estimated Share Gains from Complaint Management

Industry	Fraction Retained (ψ)[a]	Number of Competitors (n)	Average Market Share Ex Ante ($1/n$)	Market Share Ex Post ($\bar{s}$)
Eye Glasses	0.51	8	0.125	0.226
Tools	0.47	12	0.083	0.147
Floor Coverings	0.33	23	0.043	0.063
Clothing	0.33	39	0.026	0.039
Blankets, Sheets	0.19	65	0.015	0.019

[a] Product of fraction complaining and fraction finding product satisfactory after compensation in Best and Andreasen (1977, pp. 97, 99).

or, if $\omega_1 = 1/n$,

$$\bar{s}_1 = [n - (n - 1)\psi]^{-1}. \tag{4}$$

So the gain in market share depends on the number of competitors and the fraction of customers who voice and stay loyal.[4] Of course, if all firms introduce complaint management, we again obtain $\bar{s}_1 = \omega_1$, so the Prisoner's Dilemma structure is preserved albeit now for a more narrow range of parameters.

An Illustration

To evaluate the importance of complaint management, it would be useful to get an idea about the order of magnitude of the involved effects. We will use real data and equation (4) to illustrate the impact of complaint management for firms in several different industries. Consider the following product categories: eyeglasses, tools, floor coverings, clothing, and blankets and sheets. These are not only heterogeneous products containing diverse brands, they also have a high variance with respect to complaint ratios. The data on complaints come from a nationwide survey (Best and Andreasen 1977), from which we have selected product categories with both high and low complaint ratios.

In order to compute the impact on market share, we need some measure of the number of firms in the industry and their respective shares of the market. Whereas concentration ratios for the product categories above are readily available, this is not the case for individual market shares. We therefore follow a standard (but admittedly crude) practice of constructing the equilibrium number of firms as the inverse of the minimum economic scale (MES). MES can be obtained from the concentration ratios and is defined as the average size of the largest firms in the industry accounting for 50 percent of the total value of industry shipments (see, e.g., Ravenscraft 1983).[5] Applying the concentration ratios given in Fornell and Robinson (1983) for the products in Table 1, we note that the greatest impact is for the firm selling eyeglasses where the unilateral introduction of complaint management could increase market share by about 10 percentage points (from 0.125 to 0.226). A significantly smaller effect is expected for the blankets and sheets category where the increase is a market share of 0.004 (from 0.015 to 0.019). This is consistent with our theoretical analysis in terms of profitability,

[4] Note that we are cutting a corner by choosing to look at steady state market shares. If information is revealed between period 1 and period 2, it would be more logical to set $s_1 = \omega_1$ and go from there. If we do that we find $s_{21} = \omega_1[1 + (1 - \theta)\psi(1 + \omega_1)]$.

[5] For example, if the 4-firm and the 8-firm concentration ratios are 0.35 and 0.60, respectively, the MES for the industry is found from linear interpolation as $0.5[4 + (0.5 - 0.35)/(0.6 - 0.35) \times 4]^{-1} = 0.0783$.

margins, and quality elasticity of demand which are all higher for eyeglasses than they are for blankets and sheets.

Other Choice Variables

The above results emphasized the market share implications from the decision of whether or not to offer complaint management. In a more complete model, we have to consider the cost of the system, g, and the cost of compensation, $s(\psi + \phi)(v + x)$. The attraction ω is a function of other marketing variables, e.g., advertising (A), and the profit margin m depends on price (p) and quality (θ). So the profit function is given from (3) as

$$\omega(A)[1 - \psi(v) + \psi(v)\omega(A)]^{-1}[m(p, \theta) - (\psi(\theta, v) + \phi(\theta, v))(x + v)] - g(c) - A.$$

Under appropriate regularity assumptions on ω and m, we can differentiate with respect to A, v, c, and p to find the optimal values of these choice variables, A^*, v^*, c^*, and p^*. The resulting profit can then be compared to the maximum value of $\omega(A)m(p, \theta) - A$, which is the profit from not offering complaint management.

From this, it is immediately clear that complaint management will allow a firm to advertise less and/or charge higher prices. If we are willing to ignore that (3) is derived under the assumption that all firms have equal quality, complaint management may also be a substitute for quality.

Summary

Our results suggest that firms would be well advised to encourage dissatisfied customers to complain. The firm should invest to facilitate complaints and should compensate generously. It was shown that this type of complaint management can be an effective tool for customer retention, because it can increase the consumer's expected utility from the purchase. In particular, we showed that complaint management is more effective the greater the number of competitors and the higher the quality elasticity of demand. More generally, defensive marketing, such as complaint management, can be seen as a substitute for offensive marketing such as product quality, advertising, or price.

Our model sidestepped the important issue of customer cheating. That is, we assumed that defective products must be returned before compensation is paid. In practice, many firms find this requirement unnecessary. Sometimes, this is possible because $v - ac$ is relatively small, so cheaters have limited incentive and in other cases it is enough to make the complainant return a key component of the product (see also Fornell and Wernerfelt 1987, p. 345). However, most often cheating is sufficiently deterred by random investigation policies, as is cited in the literature on the economics of crime (Becker 1968).

In our empirical illustration, it is evident that the largest market share gain (from introducing complaint management) occurs in a relatively concentrated industry. The reason for this is that dissatisfied consumers generally have fewer alternatives with respect to patronage switching in concentrated industries. As a result, the complaint volume, ceteris paribus, is positively related to concentration (Fornell and Didow 1980; Hirschman 1970). Another issue in the empirical example concerns our estimate of ψ (the segment of customers who complain and remain loyal).

The effects of complaint management illustrated in Table 1 are overstated because the baseline case for the comparison assumes that $\psi = 0$. Clearly, even without a formal program for complaint management, some consumers will complain anyway and a fraction of them will remain loyal. Nevertheless, unless the firm encourages complaints and is well equipped to deal with them, it seems reasonable to assume that ψ would be

quite low. This is not to suggest that we would not be better off with ψ measuring the incremental gain due to the establishment of complaint management. Unfortunately, data to estimate this are difficult to come by. A possible reason might lie in the negative perception of increases in complaint volume in many organizations (Fornell and Westbrook 1984).

The argument in this paper is that complaints from dissatisfied customers should be encouraged because they give the firm a chance to recover otherwise lost customers. Thus, the establishment of complaint management and increases in complaint volume may well go hand in hand. The problem is that such increases are not often viewed as favorable by the personnel responsible for their handling. In fact, a recent study (Ross and Gardner 1985) found that firms often draw incorrect inferences from changes in complaint volume. Instead of considering the opportunity cost of *not* receiving a complaint, an increase in complaints is perceived as negative and sometimes is reflected in management performance evaluation and lower executive bonus compensation. Our model indicates that such a myopic policy can be very costly.[6]

List of Symbols

A:	advertising expense
a:	a consumer's relative cost of complaining
b:	a consumer's relative cost of a defective product
c:	maximum cost of complaining
f:	maximum cost of a defective product
g:	fixed costs of complaint management system
i, j, l:	firm indices
m:	contribution margin
n:	number of firms
s:	market share
p:	price
u:	utility from a working product
v:	value of compensation
x:	variable costs per handled complaint
α:	consumers who do not complain, but leave firm—in monopoly
β:	consumers who complain, and leave firm—in monopoly
γ:	consumers who complain, and stay with firm—in monopoly
η:	prior probability that a technology is perfect
θ:	fraction of units from an imperfect technology which works
ϕ:	consumers who complain, and leave firm—in oligopoly
ψ:	consumers who complain, and stay with firm—in oligopoly
ω:	attraction of a firm

[6] This paper was received in September 1986 and has been with the authors 4 months for 2 revisions.

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