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Segmenting Customers in Mature Industrial Markets

In mature industrial markets, segmenting customers on size, industry, or product benefits alone is rarely sufficient. Customer behavior in terms of tradeoffs between price and service is an important additional criterion. The authors offer a framework for such buying-behavior-oriented microsegmentation of industrial customers. They apply the framework to segment the national accounts of a large industrial company and show how the results of a segmentation study can be used to redirect the firm's resources and customer segments.

THE goal of segmentation is to identify distinct customer groups that have homogeneous needs (Wind 1978). Tailoring the marketing mix for particular segments leads to better planning and more effective use of marketing resources (Kotler 1988; Mahajan and Jain 1978). Coles and Culley (1986), for example, illustrate how DuPont segmented its market for Kevlar, an aramid fiber that is lighter yet stronger than steel. The company focused the unique needs of customers in three different segments.

- Potential fishing boat owners: Kevlar's lightness promised fuel savings, increased speed, and the ability to carry more fish weight.
- Aircraft designers: Kevlar has a high strength-to-weight ratio.
- Industrial plant managers: Kevlar could replace the asbestos used for packing pumps.

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Though such market segmentation designs based on product benefits are widely recognized as the state of the art and superior to traditional segmentation schemes based on industry type or customer size (Cardozo 1980; Moriarty and Reibstein 1986), sustaining a segmentation strategy based on benefits alone is often difficult as the product market matures. Eventually, competitors are able to offer equivalent products and many buyers may therefore be unwilling to pay a price premium. This situation is especially common for industrial raw materials and supplies that are difficult to differentiate by functions and features alone. Steadily and deliberately, as the product market turns a commodity (Kotler 1988; Shapiro et al. 1987), price and service become important buying criteria for some customers. By further segmentation of each benefit segment, the heterogeneity in a macrosegment becomes apparent.

We develop a buying-behavior-based framework suitable for microsegmenting customers in mature industrial markets. Though the concept of buying-behavior-based segmentation has been recognized for two decades (Webster and Wind 1972), few applications of the approach have been reported in the industrial marketing literature. We describe how our buying behavior framework was applied to segment further the

national account customers of a large industrial company. In addition, we demonstrate how segmentation analysis can be used proactively to influence customers' movements to segments that are mutually beneficial to the seller and buyer. In contrast, previous application work (de Kluyver and Whitlark 1986; Doyle and Saunders 1985; Moriarty and Reibstein 1986) attempted to uncover existing segments as a way to position products strategically. In our approach the assumption is that at a microsegment level, firms can influence and shape the buying behaviors of their potential customers by tactically altering marketing mix variables such as price and service.

The Conceptual Framework

Research on industrial market segmentation (see Cheron and Kleinschmidte 1985 and Plank 1985 for a comprehensive review) offers several bases for segmenting customers (Frank, Massy, and Wind 1972), including:

- demographic descriptors such as geography, standard industrial classification code, and account size (Hlavacek and Ames 1986),
- product end-use or application (Wind and Cardozo 1974),
- buying situation (Robinson, Faris, and Wind 1967),
- customer benefits (Choffray and Lilien 1978; Haley 1968),
- customer buying behavior (Bonoma, Zaltman, and Johnston 1977; Webster and Wind 1972), and
- customer decision-making style (Wilson 1971).

It has been suggested that firms would benefit most by the successive application of two or more such segmentation schemes in a nested fashion (Bonoma and Shapiro 1983), similar to the microsegmentation principle advocated by Webster (1984). Interestingly, however, none of the segmentation schemes cited here capture the underlying dynamics of a maturing market.

Product life cycle (PLC) theory contends that prices tend to drop as the product market matures (Curry and Riesz 1988; Day 1981; Simon 1979; Younger 1986). Two underlying forces cause that trend. One is customer learning during the PLC. As the product matures, many customers who have become totally familiar with the product's characteristics, functions, and features no longer require the same intensity of product information that was once provided by its supplier (Day 1986; Schmalensee 1982). As a result, they are unwilling to pay for the cost of such services. The second force is the result of competitive action, which in a mature market makes equivalent products available to customers at similar or lower prices (Day 1986).

Because of this market dynamic, customers in mature markets can be aligned along the two dimensions of price and cost-to-serve (see Figure 1; Forbis and Mehta 1981; Shapiro et al. 1987). The reason is that

FIGURE 1
Potential Buying Behavior Segments
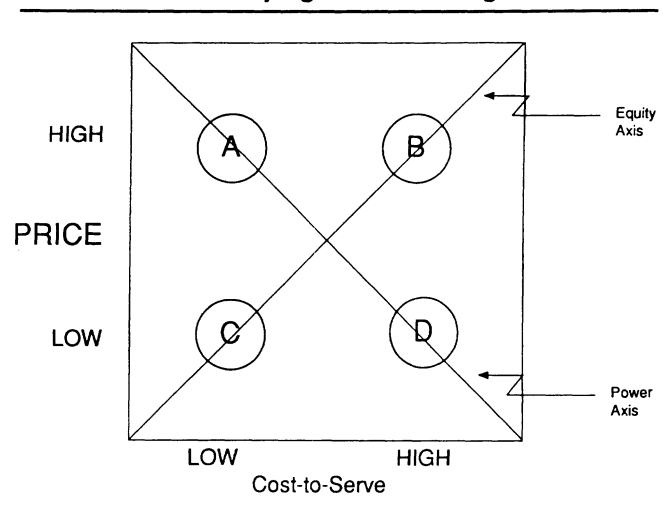
customers who demand a low price will be offered a "no frills" product accompanied by minimal service, and customers who value an augmented product will pay a higher price (Levitt 1980) and receive the full complement of services (Porter 1980). Price differentials due to product quality differences are small because competitors are able to offer more or less equivalent products. Hence, any major price variations are due to differences among services provided. Customers who receive the "core" product pay less because it costs less to serve them than to serve those who demand and value the full service.

The preceding reasoning is consistent with economic theory. Dorfman and Steiner (1954) showed that when higher service implies higher direct costs, a firm could maximize its profits by charging a price that equates its marginal revenues to marginal costs. Tellis and Wernerfelt (1987) showed empirically how the price versus service-quality relationship would hold in markets characterized by a high level of product information availability, which is certainly the case in mature markets.

In keeping with this rationale, firms operating in mature environments expect to align their customers along the equity axis in Figure 1. The lower left quadrant (C) represents a core, no-frills product without much service and the upper right quadrant (B) represents an augmented product accompanied by intensive value-added services. In both cases, the price-service offering is equitable to the seller and the buyer. The "core product" customer pays a lower price and the "value added" customer pays a higher price. This rationale, however, is based on the seller's expectations of how customers would behave in a mature market.

An alternative is given by the power axis in Figure

1. Customers see only the price dimension of the matrix in Figure 1. They do not know the seller's cost-to-serve. Because of market maturity, however, several sellers usually can offer similar products, and many customers therefore may attempt to shop for price. Guaranteed purchase volumes and large order sizes are typically offered as the bait. As a result, customers may not necessarily align themselves along the equity axis as sellers expect, but prefer to operate in quadrants C and D in Figure 1, depending on their knowledge of competitive offerings and their own market power (Scherer 1980). In the health care industry, for example, multihospital buying groups have successfully leveraged their power to seek price concessions from their suppliers (*In Vivo* 1985).

In short, all locations above the equity axis indicate that the seller is able to extract more than the full value of the services it renders, because customers perceive the firm's product offering as superior to competitive offerings or substitutes. Positions below the equity axis indicate that the firm is unable to extract the full value of the services it renders with its product. Along the equity axis itself, the exchange is fair and equitable. We now describe how this framework can be used to analyze a company's customer segments in mature industrial markets.

Database

The main purpose of our study was to validate the buying behavior framework depicted in Figure 1 and demonstrate its use for managerial action. We therefore sought a research site where the product-market environment was in the mature phase of its PLC, characterized by price pressures and the availability of equivalent competitive products. This criterion ruled out capital goods because suppliers in such markets have demonstrated their ability to maintain product differentiation, through functions and features, in spite of market maturity. Our framework is more appropriate for mature industrial raw materials and supplies, for which service rather than product characteristics is the basis for competition. We therefore sought and obtained the cooperation of the managers of the packaging division of Signode Corporation for conducting our research. This division produces and markets a line of steel strappings used for packaging a diverse range of goods such as brick, steel, cotton, and many manufactured items.

Signode, the market leader since 1948, had lost 10 share points because of stiff price competition in the six years before our study. Its managers considered Signode to be the high service supplier of steel strapping in their market. Signode was the only company to provide parts and service for repair of packaging equipment at the user firms. The packaging division also offered engineering advice on packaging needs. All other competitors provided only the steel strapping.

The company segmented its customers by size—small, medium, large, and national accounts—and within each of these segments by SIC code. Though the company did not use a buyer-behavior-based segmentation scheme, its managers believed that the firm's marketing policies were structured so that low price seekers could have a "commodity" product and customers who sought services could have a "value added" product at a higher price (conforming to the behavior underlying the equity axis in Figure 1). The managers suspected that such buying behavior variations were present in each size-based segment.

Because our study required an in-depth analysis of individual customer buying behavior, we focused on the company's 174 national accounts whose individual purchases of Signode's products exceeded $100,000 yearly. Collectively, these accounts were nearly 40% of Signode's sales revenues. In general, one would expect to find minimal variation in such a narrow macrosegment and if found it would only validate our conceptual framework. Signode's other segments (large, medium, and small) were much larger, ranging from 2000 to 20,000 customers. The 174-company sample was compact enough to enable us to gather data at the individual-customer level, but large enough to ensure statistical conclusion validity (Cook and Campbell 1979).

Extensive surveys of multiple members of complex decision-making units (DMU) have been found to be impractical and arduous (Johnson and Flodhammer 1980; Moriarty and Spekman 1984). The procedure is time-consuming, costly, and may influence the very behavior one is attempting to observe. Furthermore, once surveyed, the DMU may not converge in its opinions (Phillips 1981; Silk and Kalwani 1982). We therefore followed the methodology adopted by Anderson, Chu, and Weitz (1987) and Flodhammer (1988), and used the company's five national account managers (NAMs) and 20 dedicated national account sales representatives as key informants of customer buying behavior. Because the NAMs and account reps interact with their customers frequently and because their interactions cover many transactions over an extended time period, their perceptions of buyer behavior are likely to be accurate, especially when they are making comparisons among customers (Kernan and Sommers 1966).

To operationalize our framework from Figure 1, we constructed 12 variables to capture the potential buying behavior variations in Signode's national accounts (Platzer 1984; Tutton 1987). Six of them were chosen to reflect the price versus service variations along the equity axis and the other six were chosen

to reflect the buyer power variations along the power axis. Though this list of operational indicators may not be exhaustive, it does reflect the buying behavior dimensions that Signode's NAMs and sales reps believed to have the most influence on customer purchasing behavior. We used two sources for gathering data: in-house documents and responses from sales reps and NAMs. Table 1 summarizes the key features of the 12 variables measured for 161 of Signode's 174 national accounts (93% coverage). The data collection task could not be completed in time for the rest of the 13 accounts. Though some of the data presented here have been disguised at the company's request, the segmentation approach and its implications are accurate.

Buying Behavior Variables From In-House Documents

Given the mature stage of the market and the standardization of product features across suppliers, price versus service tradeoffs were common (Ross 1984; Shapiro et al. 1987). However, because our focus was within rather than across a market segment, we measured price and cost-to-serve in relation to Signode's other national accounts. Called "relative price" and "relative service," these two measures correspond to the price and cost-to-serve dimensions, respectively. Hence, the first four variables we measured were relative price, relative service, account size, and market share.

1. *Relative price* is a measure of the higher or lower price that an account paid in relation to Signode's other national accounts. Almost all national accounts received discounts from standard carload prices. Using accounting data on all transactions completed in the most recent 12 months, we computed a volume-weighted average discount for each national account. Average discounts ranged from 0% to as much as 11.3%.

2. *Relative service* is the higher or lower level of service that an account received in relation to other national accounts. Signode's managers identified three important components of service: (1) field sales calls, (2) unbilled parts, tools, and repair work, and (3) application and engineering services. To aggregate these three components, we first computed quantitative measures for each component using their natural units. Thus, field sales calls were measured as calls per year, unbilled work was estimated in dollars, and applications engineering was measured in hours. These individual components were converted linearly to a 1-to-10 scale and the three rescaled measures then were averaged to yield a composite score. To verify the justification for our summation (Churchill 1983, p. 255; John and Weitz 1988), we ran confirmatory factor analysis models. The three-factor oblique model fit best with the data ($\chi^2 = 8.09$, p = .620, adjusted goodness of fit = .969, root mean residual = .013). The second-order model that assumed three specific first-order factors and one general second-order factor also fit the data well ($\chi^2 = 8.59$, p = .378, adjusted goodness of fit = .972, root mean residual = .011). In either case, therefore, summation of the service constructs is a justifiable measurement strategy. All other alternative models provided a poorer fit.

3. *Account size.* Various aspects of account size have been identified as influencing buying behavior. It has

TABLE 1
National Account Database

Buying Behavior Variables	Indicators Of	Source	Units	Mean
In-House Documents				
1. Relative price	Price and service tradeoffs	Sales records/NAM judgment	Discount %	5.7
2. Relative service		Sales records/NAM judgment	1–10 scale	4.6
3. Account size (annual purchases)	Buyer power	Sales records	Dollars	556,000
4. Market share		Sales records	%	63
Salesforce Judgmental Data (Sales Elasticity)				
5. For decrease in price	Price and service tradeoffs	NAM/sales rep judgment	%	7.8
6. For increase in price				22.4
7. For decrease in service		NAM/sales rep judgment	%	8.4
8. For increase in service				2.9
		NAM/sales rep judgment	%	
		NAM/sales rep judgment	%	
9. Product importance	Buyer power	Sales rep judgment	1–5 scale	2.9
10. Switching potential		Sales rep judgment	1–5 scale	4.1
11. Market knowledge		Sales rep judgment	1–5 scale	4.3
12. DMP complexity		Sales rep judgment	1–5 scale	3.3

been argued, for example, that the larger the procurement scope (Cardozo 1968) and order quantity (Assael and Ellis 1976; Bonoma and Shapiro 1983), the higher the level of buyer-seller interdependency (Corey 1978). Using notions of "power" (Emerson 1962; French and Raven 1959), one could argue that a large volume buyer would be able to negotiate relatively lower prices and higher services than its smaller counterparts. By the same token, one can argue that if the buyer is overly dependent on one source for its large volume requirements, the seller could exert countervailing power (Gaski 1984). Regardless of the direction of influence, account size obviously affects buying behavior. We measured account size simply as the total purchase volume of all Signode products in the most recent 12 months.

4. *Market share.* A different measure of dependency is the proportion of business a single supplier has in the buyer's total purchases of a product category. This is a measure of vendor reputation (Levitt 1965; Sheth 1973) and the associated purchasing strategy—how many suppliers would be sought and how the bids would be allocated among the bidders (Bonoma and Shapiro 1983; Cardozo and Cagley 1971; Corey 1978). We used Signode's share of dollar sales volume for each account. As part of their routine sales reporting, Signode's salespeople estimated the total dollar volume of each account's steel-strapping purchases. Knowing Signode's actual sales to the account, we computed Signode's market share—an indicator of the buyer's preference for, as well as reliance on, Signode's products.

Buying Behavior Variables From National Account Reps and NAMs

In line with research by Anderson, Chu, and Weitz (1987), Corey (1978), Duncan (1966), Hlavacek and Ames (1986), Moriarty and Reibstein (1986), Parket (1972), and Webster and Wind (1972), we considered customer sensitivity to price and service changes to be two important aspects of buying behavior. Thus, using the decision calculus methodology suggested by Little (1970), we estimated customer demand elasticities with respect to price and service. Sales reps were asked the following question for each of their accounts: "If you were able to drop (increase) prices by 7%, what is your best estimate of the percentage of increase (decrease) in sales volume that would result?" The 7% represented a level of price discounting that the managers had selectively used in the past to retain certain large volume accounts in the face of competitive activity. Service elasticity was measured in the same way, except that the unit of change was broken down by its individual components for better comprehension. To add to our list of variables, the decision calculus methodology revealed four customer demand elasticities:

5. For decrease in price.
6. For increase in price.
7. For decrease in service.
8. For increase in service.

To overcome the drawbacks of the decision calculus methodology (Chakravarti, Mitchell, and Staelin 1979), the data collection method included an "anchoring" process to improve the standardization of the informants' responses (Anderson 1974). Each sales rep first tentatively evaluated a typical account and received feedback from his or her national account manager (NAM). Next, the sales vice president and the other four NAMs provided benchmarks from their own experiences with other national accounts. Using these anchors as a guide, each salesperson made a final assessment for the typical account. With this evaluation as the comparison point, the sales rep completed the questionnaires for the other accounts. At no point did we ask sales reps or NAMs for estimates outside their normal operating ranges; we thus avoided a common criticism of such judgmental data collection methods.

In addition to these demand elasticities, four more buying behavior indicators—product importance, switching potential, market knowledge, and decision-making process complexity—were estimated by the national account sales reps through the data collection process described above.

9. *Product importance.* The degree of risk (Cardozo 1980; Moriarty and Galper 1978; Sheth 1973) as well as compatibility and complexity (Rogers 1983) of the product or its application have been identified as key determinants of organization buying behavior. Degree of risk here pertains to the "line-stopping" potential of the product. If the product's quality or its delivery is unreliable, it could significantly influence the operations of the user firm. Compatibility and complexity refer to the significance of the product's fit with the buyer's operations. Depending on the application and extent of usage, the importance of steel strapping varied over Signode's national accounts. Customers that perceived the product line to be critical were thought to devote more energy and consideration to the buying process.

10. *Switching potential.* Though Robinson, Faris, and Wind (1967) suggested that alternative suppliers are not usually considered in straightforward rebuy situations (such as Signode steel strapping), Anderson, Chu, and Weitz (1987) provide evidence that incumbent suppliers may have to "prove themselves" again to "rewin" the bid. We believe the latter observation applies particularly for mature commodities because suppliers and their products generally are considered undifferentiated by customers (Kotler 1988). Switching potential (Gensch 1984) is also related to the notion of supplier reputation and previous performance history (Parket 1972; Sheth 1973). Over the years, several customers had built a trusting relationship with Signode because of the product or the service or both. These customers were expected to deviate less from normal purchasing patterns than other customers, who might be more likely to switch at lower levels of dissatisfaction.

11. *Market knowledge.* Regardless of the stage of market maturity, customers vary substantially in their knowl-

edge of competitive products and prices (Nagle 1987); they search for information (Sheth 1973) in varying degrees. Bonoma and Shapiro (1983) pointed out that some customers actively seek alternative information as a matter of policy. Naturally, customers with a detailed knowledge of alternative suppliers' steel-strapping offerings were expected to use somewhat more aggressive negotiation strategies (Corey 1978).

12. *Decision-making process (DMP)*. The complexity of the buying decision-making process is a reflection not only of product and vendor characteristics but also of the buying organization's priorities and purchasing strategies (Johnston and Bonoma 1981). Thus, decision-making style and structure (Duncan 1966; Moriarty and Bateson 1982; Moriarty and Galper 1978) are indicative of customer buying power. At Signode, national account reps suggested that customers with considerable leverage usually required several sales presentations and often contract-by-contract negotiation before an agreement could be reached.

Analysis and Results

To identify buying behavior microsegments, we performed a hierarchical cluster analysis based on the 12 variables of Table 1. Though there is no consensus on the best clustering algorithm, we selected Ward's method of minimum variance to maximize homogeneity within clusters and heterogeneity between clusters.[1] To determine the number of clusters, we examined three statistics.[2] The cubic clustering criterion and the pseudo F-statistic both showed local peaks at the four-cluster solution, whereas the pseudo t^2-statistic revealed a large drop at the fourth cluster. We also used discriminant analysis to check the cluster groupings (Churchill 1983, p. 654; Green 1978). The four-group discriminant analysis indicated the presence of two significant discriminant functions (eigenvalues 12.0144 and .4616, respectively), which recovered 92.8% of the classification accurately.

Mean values of the buying behavior variables are reported for each microsegment in Table 2 and the standardized discriminant function coefficients are reported in Table 3.

Buying Behavior Microsegments

Segment 1: programmed buyers. Customers in this microsegment were small and viewed the product as a routine purchase item. They had the lowest average sales of any group and were not particularly price or

service sensitive. The product was not very important or central to their operations. In comparison with those in the other three microsegments, these customers had the lowest market share of Signode products.

We subsequently learned that many of these accounts used rules-of-thumb to allocate their purchases. They split orders among two or three vendors in fixed proportions. Signode, because of its market-leader reputation, received a major share of these purchases—on average, about 54%. Perhaps because of their routinized procedures, these accounts invested little effort in the buying process, either in negotiating purchases or in investigating alternative sources. In return, Signode charged them the full list price and provided below-average service. Because customers in this segment tended to allocate market share systematically rather than evaluate the price-volume tradeoffs, we characterized the purchasing behavior of this microsegment as "programmed buying."

Segment 2: relationship buyers. Customers in this microsegment were also relatively small. The product itself was moderately important in their operations and, unlike the programmed buyers of segment 1, they were more knowledgeable about competitive offerings. Though customers in this microsegment paid lower prices and received more service than programmed buyers, they also gave Signode a higher market share (67.8%).

Customers in this microsegment had a propensity to switch, but they were less prone to switching than their counterparts in the third and fourth segments. In addition, in comparison with their more aggressive counterparts in the third and fourth segments, these buyers did not push Signode for price and service concessions and they paid higher prices for relatively less service. This difference in "value received" probably explains their extreme sensitivity to price increases. On average, a 7% price increase in this microsegment would decrease purchase volumes by as much as 28%. These customers seemed to prefer Signode's partnership to a mere price exchange. We labeled the behavior of this segment as "relationship buying."

Segment 3: transaction buyers. Customers in this microsegment were, on average, twice as large as the relationship buyers. They received price discounts averaging about 10% and an above-average service level; they had the highest sensitivity to decreases in service. The product itself was very important to their operations. Customers in this group were very knowledgeable about competitive offerings and, though valuing Signode's service offerings, they would not hesitate to switch suppliers. Because these customers actively considered the price versus service tradeoffs,

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[1]Milligan (1980), in examining 15 clustering algorithms, recommended Ward's method as the best available. In this method the distance between two clusters is the ANOVA sum of squares between the two clusters, added over all the variables. At each iteration, the within-cluster sum of squares is minimized over all partitions.

[2]In comparisons of 30 methods for estimating the number of clusters (Cooper and Milligan 1984; Milligan and Cooper 1985), the cubic-clustering criterion (Sarle 1983), the pseudo F-statistic (Calinski and Harabasz 1974), and the pseudo t^2-statistic (Duda and Hart 1973) have been successful in identifying the appropriate number of underlying clusters.

TABLE 2
Group Means[a]

Behavioral Surrogates	Segment 1 (54 accounts)	Segment 2 (65 accounts)	Segment 3 (22 accounts)	Segment 4 (11 accounts)
1. Relative price (%)	0.0	−7.9	−10.1	−11.3
2. Relative service (%)	3.6	4.9	5.6	7.1
3. Account size (sales)	$122,000	$472,000	$1,100,000	$2,100,000
4. Market share (%)	54.2	67.8	71.9	68.3
5. Percentage increase in sales for price drop	5.6	8.9	8.7	11.8
6. Percentage decrease in sales for price raise	15.5	27.9	24.5	22.7
7. Percentage decrease in sales for service drop	5.1	9.2	12.5	12.3
8. Percentage increase in sales for service raise	1.2	3.0	5.2	7.3
9. Product importance (%)	2.5	3.0	3.5	3.5
10. Switching potential (%)	3.8	4.4	4.5	4.6
11. Market knowledge (%)	4.0	4.5	4.6	4.7
12. DMP complexity (%)	3.2	3.6	3.3	3.4

[a]Of the 161 complete data records, the clustering algorithm omitted nine cases as outliers. The numbers in rows 5 and 6 should be read as the percentage increase or decrease in sales for a 7% price change. The numbers in rows 8 and 9 should be read as the percentage increase or decrease for a unit of service change.

TABLE 3
Standard Discriminant Function Coefficients

Behavioral Variables	Function 1	Function 2
1. Relative price	−.1044	.8019
2. Relative service	.0417	−.0875
3. Account size (sales)	1.0103	.2270
4. Market share	.0247	−.5487
5. Percentage increase in sales for price drop	.1207	−.0909
6. Percentage decrease in sales for price raise	−.0280	.3779
7. Percentage decrease in sales for service drop	−.0940	.0614
8. Percentage increase in sales for service raise	.0443	−.2598
9. Product importance	−.1164	.0677
10. Switching potential	−.2000	.0357
11. Market knowledge	−.0378	.2054
12. DMP complexity	.2012	−.4069

but often favored price over service, we labeled them "transaction buyers."

Segment 4: bargain hunters. Customers in this microsegment were large volume customers that received the largest price discounts (averaging 11.3%) as well as the highest level of service. They were sensitive to any changes in price or service; the product was very important to their operations. They were most knowledgeable about alternative suppliers and most likely to switch suppliers at the slightest dissatisfaction. Customers in this segment were the ultimate bargain hunters.

Discussion

The purpose of our study was to identify buying behavior variations in macrosegments such as national accounts. We argued that such an analysis would be useful in redirecting a company's price versus service offerings in mature industrial markets. Tables 2 and 3 confirm the presence of four such buying behavior segments. Even though sales (or account size) provided the single most important discrimination across the four groups (see Tables 2 and 3), without the buying behavior information provided by the rest of the variables, it would have been impossible for Signode's managers to devise strategies to realign customers along the equity axis of Figure 1—an important objective of our study.

Figure 2 shows the alignment of the behavioral microsegments with respect to the relative price and relative service variables. As mentioned previously, Signode's managers expected to find their accounts aligned along the equity axis. In particular, the company believed that customers paid for the services they received. Moreover, because Signode had positioned

FIGURE 2
Segment Profile
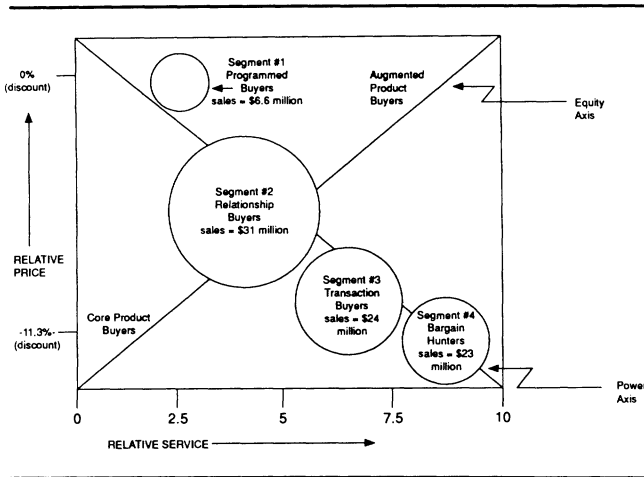
itself as a full-line, high-value supplier to its national accounts, the managers expected to see a large concentration of national accounts in the upper right quadrant (augmented product buyers). The analysis of buying behavior microsegments, however, highlighted the fact that the company's national accounts were aligned in exactly the opposite formation. Only one segment of customers, the relationship buyers, was positioned on the diagonal; the other segments were on a cross-diagonal axis.

Because Signode's products and performance characteristics were well understood, the company's managers found it plausible that, in this mature market, many large national accounts did not want to pay for costly support service that they no longer needed. What the managers found surprising was the fact that a large number of accounts wanted a high level of service as well as low price (segment 4 buyers). The profile of these customers from Table 2 shows they were clearly the larger customers that, perhaps taking advantage of the price and service rivalry among the various vendors in this competitive marketplace, had managed to extract steep concessions from the company.

Signode's managers also expressed concern about the high price–low service customers (segment 1 buyers), because they were open to competitive inroads. On further examination, the managers were reassured that the higher price was correlated with smaller order sizes (and lower Signode market shares). If and when these accounts could be persuaded to increase their order sizes, they would be eligible for lower prices. The biggest challenge to the company, after the identification and alignment of the four segments, was how to reorient price and service offerings to improve profits without losing sales volume.

At the time of the study, Signode's managers were under severe pressure from its national accounts to reduce prices. The buying behavior microsegmentation and the concurrent analysis of the judgmentally generated sales elasticities, however, suggested that price and service changes would not be equally effective in all four segments. When sales variations were estimated for each microsegment, Signode found that breaking even on a 7% price change would require total sales volume to change by about 20%. Similar estimates for changes in service showed that breaking even on a one "unit" service change would require total sales volume to change by 8%. Though these numbers should be viewed with caution because the data were gathered from salespeople in a judgmental exercise, the estimates generally suggest the following outcomes.

- Decreasing price is unprofitable for Signode because the estimated increase in sales is far below the required 20% for every microsegment in Table 2 (see row 5 in Table 2).
- Increasing price is profitable in the programmed buyer microsegment—sales decrease only 15.5% in comparison with a breakeven of 20%. The sales decrease exceeds the breakeven number for all other microsegments (see row 6 in Table 2).
- Decreasing service is profitable in the programmed buyer microsegment because the estimated sales drop is 5.1%. The sales decrease exceeds the breakeven of 8% in all other segments (see row 7 in Table 2).
- Increasing service is barely profitable in the bargain hunter microsegment—sales increase 7.3% in comparison with a breakeven of 8%. The sales increase is far below this number for all other microsegments (see row 8 in Table 2).

It is interesting to note that programmed buyers were willing to pay a relatively higher price without demanding additional service. In a sense, these accounts were willing to pay a premium to maintain their rule-of-thumb purchase allocations and have the flexibility of buying a high proportion (46%) of non-Signode products. In comparison with other national accounts, programmed buyers were not as sensitive to price or service changes. Hence, to increase market share in these accounts, Signode's salespeople would need to influence their customers' underlying decision-making processes. Signode managers therefore directed the sales reps handling these accounts to focus their efforts on changing the buying decision-making strategies that limited Signode's share.

The bargain hunters posed a more immediate problem. These accounts were critical to the company because of their very large size—11 accounts contributed nearly 25% of national account revenues. These accounts, however, also demanded the lowest prices and the highest levels of service. Worse still, bargain hunters had the highest propensity to switch to competitive suppliers. Hence, managing the bargain hunt-

ers would require considerable tact and skill to keep them from switching while countering their discount requests. To protect company margins, Signode managers decided that price cutting should be used only as a defense against price cuts of competitors. Instead, Signode offered additional service in hope that it would improve sales volume beyond the estimated 8% breakeven point. In addition, the NAMs were directed to take an active role in handling these 11 accounts. We caution industrial marketers who want to realign their accounts similarly to consult the provisions of the Robinson-Patman Act, which allows price discrimination only on the basis of specific factors such as cost differences or competitive activity (Bowersox et al. 1980).

The relationship buyers and transaction buyers of the middle microsegments had somewhat similar profiles, except that the former were less likely to press Signode for price and service concessions. Though the relationship- and transaction-oriented customers did not pose an immediate problem, both microsegments were sensitive to price and service tradeoffs. Because Signode managers were concerned about the potential migration of these accounts to the bargain hunter microsegment, a separate service management group was created to explore ways of adding service value for this group of customers.

Conclusions

We believe the practice of industrial market segmentation has lagged behind the theoretical developments in the field. Though the concept of buying-behavior-based segmentation was advanced two decades ago, virtually no application of the concept has been reported to date. Many important and valid reasons can be found for this applications gap but, as our research demonstrates, considerable value can be gained by attempting to move toward buying-behavior-based segmentation. A knowledge of segment behavior helped the Signode Company to redirect marketing resources for profit gain.

After the analyses at Signode, we believe that even a simple framework, such as the two-dimensional plot of price versus cost-to-serve in Figure 1, is capable of unearthing a rich subsegment of behaviors in industrial accounts. As can be seen from the figure, the diagonal equates the price to cost-to-serve for the seller. We hypothesize that the seller's profit would be roughly equal for accounts located on this axis—when customers want services (augmented product), they are willing to pay higher prices. The cross diagonal, however, represents an axis of product differentiation. Clearly, customers that demand and get high levels of services for low prices must have alternatives, just as customers that pay high prices must find the product attractive even though they do not receive the full battery of services. Obviously, the seller's profits are likely to be higher in the upper left quadrant and lower in the lower right quadrant than on the diagonal axis. The segment descriptor variables and dimensions are likely to vary across applications, but nevertheless a few variables could provide rich diagnostics for management actions.

In addition, our research demonstrates a practical and implementable method for constructing buyer-behavior-based segments from readily available data sources. The key is to identify variables that adequately capture the variance in buying behavior and that address a specific management problem. By selecting the segment descriptor variables to address managers' concerns with price and service—two variables under Signode's control—we designed the buying behavior microsegmentation to provide useful guidance for Signode's account management policies.

We acknowledge that one application does not necessarily prove the rule, but it at least provides a benchmark for future studies. Our purpose here is merely to show that industrial market segmentation theories can be usefully applied to management problems.

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