SEGMENTING INDUSTRIAL MARKETS

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ABSTRACT

Industrial market segmentation continues to offer firms an attractive set of tools to improve competitiveness and enhance performance. Increased pressures for improved productivity and flexibility in responding to dramatically changing business environments requires each firm to carefully weigh the costs and benefits of segmentation. In this paper, industrial market segmentation is viewed as a decision process with five key interacting managerial decisions. Each decision is briefly reviewed and the program of research necessary to support the segmentation decision process is considered. The paper concludes with a discussion of opportunities to extend the concept of industrial market segmentation to other stakeholders of the firm besides customers and potential customers.

INTRODUCTION

Industrial market segmentation enables managers to more effectively allocate resources to achieve desired market response and business objectives. The concept of market segmentation, with its roots in price discrimination theory

in economics (Robinson 1954), proposes that a strategy focusing on the demands of sub-markets (segments), each with distinct needs, can be more profitable than one focusing on the entire market.

The case studies provided by Gensch, Aversa, and Moore (1990) and Woodside and Pearce (1989) provide compelling evidence of the positive consequences industrial market segmentation. The former study describes the use of multiattribute choice models to identify and target segments of electrical equipment buyers. In a one year test, segmentation applied in two of three geographic districts resulted in sales increases of 18 percent and 12 percent—while sales declined 15 percent for the industry and 10 percent in the district in which segmentation was not applied. The firm reports continuous market share increases from the segmentation approach. The Woodside and Pearce (1989) study describes an application of segmentation for shotblasting services. Implementation of marketing programs in four identified segments resulted in market share increases of at least 3 percent in three of the four segments after six months.

The degree to which segmentation is used as a basis for strategy may depend upon the changing conditions of an industrial market and its environment. The greater the change in a market (e.g., due to technology, competition, regulations, and other factors), the greater the likelihood that heterogeneous needs and problems may arise among potential buyers. This heterogeneity of needs can provide opportunities for a firm willing to segment its markets and focus its efforts on a selected portfolio of segments. Segmentation is even more important for firms that attempt to globalize their operations because it is often more effective to target selected segments across selected countries.

To insure that industrial firms take full advantage of the opportunities of segmentation, this paper seeks to provide a better understanding of its potential benefits by highlighting the approaches that could enhance the value of industrial market segmentation in practice. More specifically, the objectives of the paper can be stated in terms of three major questions:

1. What are the major decisions involved in industrial market segmentation and what managerial guidelines are available from published marketing research studies and experience?
2. What are the major research approaches for conducting industrial market segmentation studies and what guidelines should managers consider in deciding which to use?
3. In addition to segmenting markets of buyers, how can the segmentation concept be applied to other aspects of industrial marketing?

Each of these questions is considered in the following sections of the paper.

INDUSTRIAL MARKET SEGMENTATION DECISIONS AND GUIDELINES

Industrial market segmentation is a decision process that enables a firm to effectively allocate *marketing* resources to achieve business objectives. The decision process seeks to implement the major tenets of the *marketing concept*—to define an offering (products and services) that meets the needs of target buyers, while recognizing the behaviors of competitors and other stakeholders that define the market. While there are several decisions to be made in the process of segmentation,[1] they revolve around the identification of groups of potential organizational buying centers that within each group are similar in response to a marketing program, and between-groups are different in their response.

Five interrelated questions are proposed as the major decisions defining the process of market segmentation for managers of industrial firms:

1. Should this industrial market be segmented? (The Decision to Segment)
2. If so, how should the market be segmented? (Segment Identification Decision)
3. Which segments should be selected? (Segment Selection Decision)
4. What resources should be allocated to each segment? (Marketing Resource Allocation Decision)
5. Can a segmentation strategy be implemented? (Segment Implementation Decision)

These decisions center on three sets of variables as outlined in Figure 1:

*   *Marketing Resource Variables:* These are the marketing mix decision variables which, when established, constitute the marketing program.
*   *Market Segmentation Variables:* These are the variables which can be used to characterize or describe potential organizational buyers within a market of organizations.
*   *Market Response Variables:* These are variables that define the bases for assigning organizational buyers into relatively homogeneous groups.

Using these variable sets, the basic strategy of segmentation includes:

a. the decision to segment, which depends on the ability to identify groups of organizations with similar response patterns and the ability to generate higher long term returns from a segmented strategy;
b. the identification of segments, through response and segmentation variables, that are differentially related by market responses to various marketing resources;

Figure 1. Illustrative Variables Involved in Industrial Market Segmentation Decisions

Marketing Resources

Product

- Types and number of features
- Positioning
- Reliability
- Durability
- Service
- Etc.

Price

- Margin
- Terms of sale
- Past price changes
- Etc.

Distribution

- Number of distributors
- Number of outlets
- Delivery
- Number of salespersons
- Etc.

Promotion

- Sales force size
- Creative message
- Media
- Advertising budget
- Public relations
- Etc.

Market Segmentation Variables

Environmental

- Competition
- Culture
- Technology
- Economic
- Political
- Regulatory
- Legal
- Etc.

Organizational

- Industry type (e.g., SIC)
- Size
- Degree of centralization
- Effectiveness
- Capabilities (technical, financial, etc.)
- Location
- Etc.

Buying Center

- Size
- Composition
- Buying situation
- Influence
- Consensus
- Buying process (including criteria)
- Buying organization & policies
- Relations with suppliers
- Etc.

Individual

- Age
- Experience
- Personality
- Education
- Self-confidence
- Benefits sought
- Etc.

Market Response Variables

Organizational

- Share
- Trial
- Purchase/adoption
- Source loyalty
- Price sensitivity
- Etc.

Buying Center

- Buying process
- Information search
- Criteria/benefits sought
- Negotiation style
- Application
- Decision
- Post-purchase evaluation
- Etc.

Individual

- Awareness
- Knowledge
- Liking
- Preference
- Recommendation
- Actions
- Etc.

c. the selection of target segments;
d. the allocation of marketing resources within and across segments; and
e. the design and implementation of a strategy based on marketing resource variables aimed at meeting the needs of the selected segment, subject to the objectives of the firm (i.e., the desired market response).

In the following sections, each of the five questions is discussed. Managerial guidelines based on published empirical studies are provided as available.

The Decision to Segment

The segmentation decision addresses the critical question of whether or not one should segment an industrial market. The price discrimination model in microeconomic theory (Robinson 1954) provides a theoretical basis for the marketing recommendation that in separable and heterogeneous markets, segmentation yields greater returns than a nonsegmentation strategy. However, a review of published industrial market segmentation studies offers no broad-based empirical validation of this widely accepted concept. This is in part due to the relative infancy of the formal study of industrial market segmentation. Aside from convincing case studies (e.g., Gensch, Aversa and Moore 1990; Sinclair and Stalling 1990; Woodside and Pearce 1989; Bennion 1987; deKluyver and Whitlark 1986; Robles and Sarathy 1986; Doyle and Saunders 1985; Johne 1984) the focus of most research efforts has been on methodological developments and segment profiling rather than on evaluation of the cost, benefits, and risks involved in a segmentation strategy.

Despite the absence of empirical studies to confirm the value of segmentation, there may be some evidence from industry practice to indicate its benefit. Consider the following examples:

- Gensch (1984) reports (the ABB case study cited above) that segmenting the market for electrical equipment by supplier loyalty produced "impressive sales results." For example, those who indicated an indifference in preference among competitors (low loyalty), were successfully targeted as highly responsive to marketing efforts.
- In 1969, Cullinane Data Base Systems introduced its first computer software product named CULPRIT. Initially, the package was targeted at the data processing department of all large companies. However, the data processing managers didn't like it because it required programmers to use an unfamiliar shorthand computer language. Sales floundered. Instead of abandoning the product, Cullinane analyzed the market and segmented it by user needs. Several productive market segments were identified that were the basis for a portfolio of products. For example, they found that the internal auditors of large companies needed a soft-

ware program with CULPRIT's capabilities and a simplified programming language. The product was renamed EDP-AUDITOR and successfully targeted to the auditing departments of the same companies whose data processing departments had formerly rejected it.

The theoretical origins of segmentation, published case studies, and numerous examples from experience suggest that a segmented industrial marketing strategy is viable. However, its viability in a particular market situation for a particular firm may be a function of the other four segmentation decisions made by the firm. For example, if no meaningful segments are identified, a strategy based on segmentation makes little sense. Thus a decision of whether or not to segment requires consideration of the other major segmentation decisions.

Segment Identification Decision

Identifying segments involves decisions about the "basis" for segmenting the market, and "descriptors" of the segments (Frank, Massy and Wind 1972). Deciding on which basis to divide a market requires selecting one or more appropriate "Market Response Variables" (see Figure 1). As with consumer markets, there is no single best basis for segmenting industrial markets; different bases for segmentation can be best used for different objectives and managerial decision problems (Wind 1978). For example:

- Segmentation for new product decisions ought to consider buyer utilities for attributes of possible new product alternatives as a basis for segmentation (Wind, Grashof and Goldhar 1978).
- Segmentation to develop positioning and repositioning strategies for a product can be based upon buyer benefits (Hlavacek and Reddy 1985)— deKluyver and Whitlark (1986) and Moriarty and Reibstein (1986) illustrate benefit segmentation in the air compressor and computer terminal markets, respectively.
- Segmentation for pricing decisions may focus on buyer price sensitivity or responsiveness to price changes (Ferrell, Lucas and Bush 1989).
- In many situations, *usage* (whether alone or in combination with other bases for segmentation) is often a critical component of the selected bases for segmentation. For example in business markets for telecommunication services, heavy, moderate, light, and nonusers are often used to define usage-based segments. In this case usage variables may be number of phone calls, average call length, number of telephone outlets, or some combination of these.
- Thomas (1989) explores several marketing decisions based on buying center segments defined by perceived purchase role responsibilities.

Once a market is divided by response variables, these "segments" can be described by "Market Segmentation Variables" (Figure 1). The value of describing segments includes the ability to identify recognizable groups of potential buyers for media selection, sales message design, sales force selection and other marketing decisions. For example, Lynn (1986) found three discriminating characteristics that described benefit segments in the market for CPA services: (1) firm size in sales volume and net worth, (2) length of time the business firm was associated with its CPA firm, and (3) whether or not the business firm had an audit committee. Peters and Venkatesan (1973) found that organizations classified in their response to new computers as "adopters," were more likely to be manufacturers, finance and insurance companies, wholesalers, and retailers than "non-adopters"—which tended to be specialized operations, service industries, textile manufacturers, and construction firms. Consequently, the segment identification decision involves establishing the identity of segments (in terms of bases and descriptors) that have the probability of a favorable market response (sales, adoption, preferences, etc.). To facilitate this decision, information that links segmentation variables differentially to market response variables is needed.

A review of the organizational buying behavior literature revealed several studies that significantly related various market segmentation descriptor variables to response variables (Thomas and Wind 1982). These findings are summarized in Table 1. In the rows, the variables related significantly to market response are identified, and in the columns the "degree of consideration"

Table 1. Summary of Significant Industrial Market Segmentation Variables

Segmentation Variables	I. Serious Consideration	II. Moderate Consideration	III. Exploratory Consideration
Organizational	- Industry type - Industry size - Centralization - Pattern of usage	- Geographic location - Autonomy - Usage experience	- Age (# Years in Business) - Administrative/ staff ratio - Usage rate
Buying Center	- Composition - Buying situation - Criteria used in buying decision - Previous buying pattern	- Size - Consensus - Buying influence	- Experience - Centralization - Bases of power - Psychographics
Individual	- Education - Perceived Risk	- Product-specific experience	- Age (Years) - Experience (Job years) - Need for certainty

Source: Adapted from Thomas and Wind (1982)

managers might give to using the variables for identifying market segments is indicated. The "degree of consideration" is based on a classification of the findings by the number and quality of studies reporting that finding. Table I supports the contention that selected segmentation variables can be helpful in describing industrial market segments.

As in other marketing decision areas, creative approaches to segment identification can lead to competitive advantage. For example, a segmentation based on an "evolutionary usage pattern" was found to be especially relevant in capturing the dynamic nature of markets and allows for more accurate forecasts of the expected diffusion of new product entries. Consider the market for office automation. At the one extreme is the single office with inexpensive telephone equipment and service, simple electric typewriter and a simple copier. At the other extreme of this market are the few firms who are fully equipped with all the latest office products and gadgets and represent the prototypical "office of the future." It is very unlikely, however, that organizations in the first segment would change overnight to the latter segment. One can expect certain evolutionary patterns from segment-to-segment reflecting the organization's current usage pattern, and likely evolution in terms of additions and deletions of products, services, and systems.

Segment Selection Decisions

When identifying industrial market segments, managers will invariably begin a selection process. The need emerges to narrow the number of identified segments to a select few, from which the decision can be made to target one or more with a marketing program. This is a critical management decision since all other components of a marketing strategy follow it (Corey 1975). Unfortunately, the literature offers sparse guidelines on how to make segment selection decisions.

Part of the difficulty in making segment selection decisions is that they are so intertwined with segment identification decisions and marketing resource allocation decisions. For example, in the market for fax machines, a very attractive segment may be identified (e.g., heavy users), however several major competitors may also have selected this as a target. This suggests identifying alternative segments, based perhaps on benefits rather than usage. If a benefit segment is identified (e.g., fax machines that are capable of linking to local area computer networks so that users can send faxes directly from their personal computers), the question becomes whether product development resources can be allocated to developing this feature.

One way to manage the difficulty of segment selection decisions is to adopt a multiple-stage approach. For example, in their two-stage approach, Wind and Cardozo (1974) proposed the identification of both *macrosegments* (organizations with similar characteristics such as type, size, etc.) and

microsegments (relatively homogeneous groups of buyers from within macrosegments). They propose that each identified macrosegment be evaluated on whether it "exhibits distinct response to the firm's marketing stimuli," or intended marketing program. If so, the macrosegment should be used as the target segment. If not, then microsegments should be identified.

In effect, in a two-stage segmentation approach, at least three different segment selection decisions are implied:

1. Which macrosegments *across* markets/countries should be selected?
2. Which microsegments *within* each macrosegment should be selected?
3. Which microsegments *across* macrosegments should be selected?

For example, assume two macrosegments (A and B), and respective microsegments for each (A_1, A_2, and B_1, B_2) have been identified. Macrosegment A or B could be selected; microsegment A_1, A_2, B_1, or B_2 could be selected; or any combination of the microsegments could be selected (e.g., A_1 and B_1 or A_1 and B_2). The final decisions of course depend on the criteria managers use to evaluate and decide on which segment(s) to target.

Choffray and Lilien (1978) provide an excellent illustration of the use of a two-stage approach to segment the market for heating and air conditioning equipment. After identifying macrosegments based on such factors as industry and geographic location, they used the pattern of involvement in the buying decision process to discern four microsegments within a particular macrosegment. For example, they were able to characterize the segment with a high level of top management involvement as smaller, more satisfied with their current air-conditioning system, and more concerned with the economics of airconditioning than the other three segments. Similarly, Woodside and Wilson (1986) found the two-stage approach to be essential in understanding the structure of the industrial printing market.

While a two-stage approach illustrates the principles of multi-stage industrial market segmentation, extension to more than two stages is often desirable. For example, Bonoma and Shapiro (1983) extend the approach by proposing five sets of "nested" variables to be considered. These include the macro-variable set of demographics, within which are nested operating variables, purchasing approach variables, situational factors, and the micro-level personal characteristics of buyers. Bonoma and Shapiro urge the use of economic criteria in evaluating segments generated from this nested approach and recommend stopping the analysis at the nest when segments appear to be economic and useful.

Since "managers" select segments, they implicitly use evaluative criteria in their decisions. Depending on managerial objectives, criteria that can be used in selecting segments include measurability, substantiality, accessibility, and actionability (Kotler 1991). These often translate into numerous other related criteria:

- Segment size
- Expected segment growth
- Expected profitability
- Risk
- Availability of distribution and promotional opportunities
- Expected competitive activities in the segment
- Competitive advantage if positioned in the segment
- Expected sales response
- Expected costs
- Effect of positioning in the segment on the portfolio
- Cannibalization of existing product sales
- Environmental factors affecting the segment

These and other criteria often require information that is not always available from market research. Consequently, a decision support framework or modeling approach is needed to aid managerial decision-making. This framework should capitalize on both managerial experience and available data. In the minimum, it should include (1) identifying relevant criteria, (2) establishing relative importance of the criteria, and (3) specifying a methodology to evaluate alternative segments on the selected criteria. The first two require managerial consideration of objectives and goals. The third, evaluation methodologies, can range from a simple *subjective* assessment of the segments on specified criteria through empirical analysis aimed at evaluating the segments on the criteria to procedures such as the Analytic Hierarchy Process (AHP), which allows the integration of "hard" market data with manager's subjective assessments.
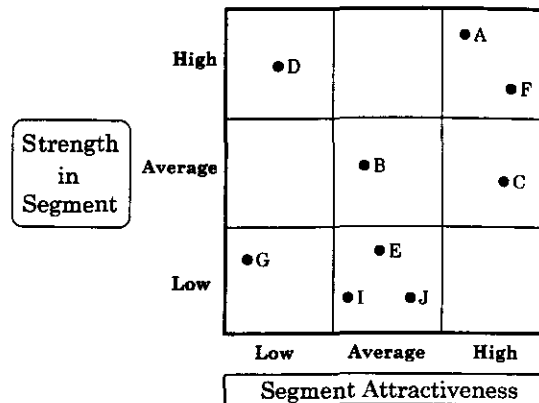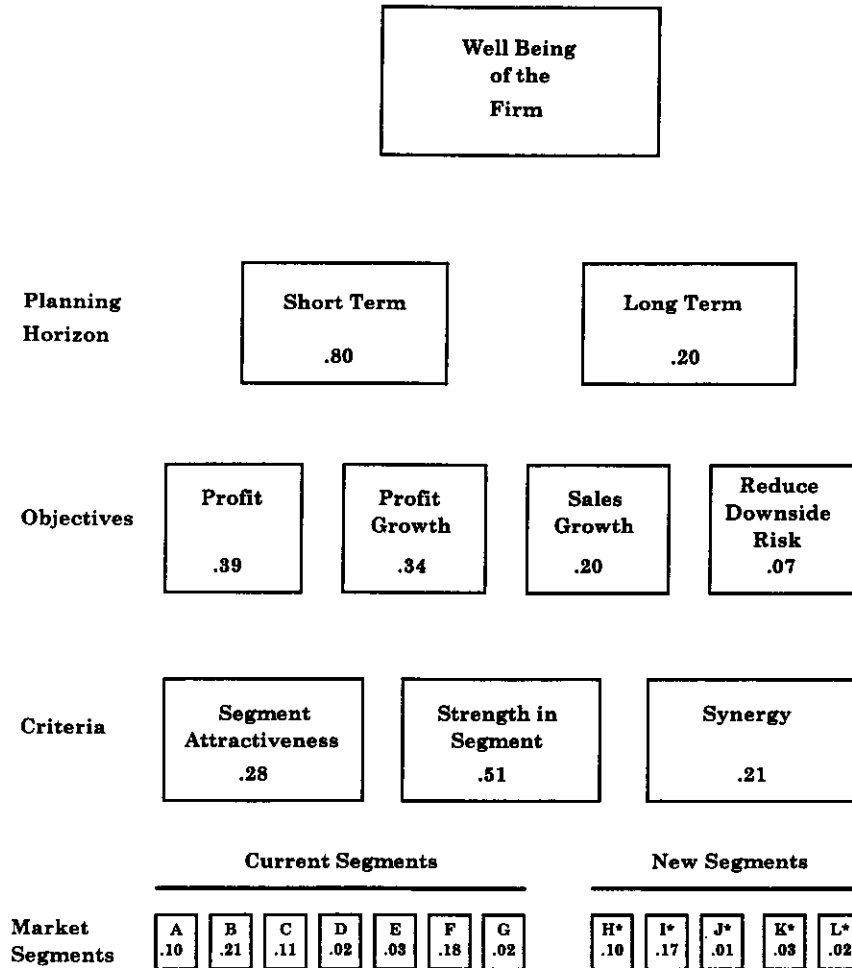
Figure 2.   A Portfolio of Market Segments

Following the logic of product and business portfolio analysis, a portfolio of current and potential market segments can be constructed (Wind and Robertson 1983). Figure 2 illustrates a portfolio of segments in which each segment can be evaluated based on its attractiveness and on the firm's expected position in it (similar to the GE/McKinsey portfolio matrix). The "segment attractiveness" and "strength in segment" dimensions can be based on a single criterion or represent a composite of multiple criteria. For example, segment attractiveness criteria could include such factors as the segment size and the cost of reaching the segment. Segment strength criteria could include such factors as current share and expected share in the segment, various barriers to entry, and expected profitability. The specific criteria used and their relative weights in developing the portfolio dimensions can be determined by management judgement and marketing research input. deKluyver and Whitlark (1986) provide a good case study illustrating this approach. Other portfolio approaches might include the financial portfolio model (Keeney and Raiffa 1976, and Cardozo and Wind 1985), which considers the various segments with respect to their risk/return characteristics.

Alternatively, the AHP (Wind and Saaty 1980) provides an approach that can help generate and evaluate alternative segments and lead to the selection of a portfolio of segments. Fundamentally, AHP is a measurement approach that helps one to decompose a complex decision problem into a multilevel hierarchic structure of objectives, criteria, subcriteria, and alternatives.[2] The essential steps in AHP include: (1) setting up the decision problem into a hierarchy of interrelated decision elements, (2) evaluating the various elements of the hierarchy by pairwise comparison of decision elements, and (3) using a mathematical method to estimate the relative weights of decision elements, including aggregating the relative weights of decision elements to arrive at a set of ratings for the decision alternatives or outcomes.

The application of AHP to segment selection involves bringing together key managers into a session in which they structure the problem hierarchically. Supplemented with available marketing research information and managerial experience, the group can then make pairwise comparison judgements of the relevant decisions elements. With these inputs, the model generates relative weights of the various decision elements including the prioritization of the segments under alternative scenarios. Figure 3 illustrates the output of such an approach. An examination of this illustrative hierarchy and priority suggests a number of segmentation related conclusions:

- Management established two sets of criteria for evaluating market segments—a set of key objectives (profit, profit growth, sales growth and downside risk) and three criteria (segment attractiveness, strength in segment, and synergy) which vary in their importance with respect to the firm's ability to achieve the four objectives. The objectives, in turn, *vary*

Note: The numbers are the composite priorities of each item.

Figure 3. An Illustrative Output of an Analytic Hierarchy Process
Designed to Select a Portfolio of Market Segments

in their importance under short or long term conditions (not shown in the figure). The overall importance of the four objectives assuming an 80/20 weight for short vs. long term is presented in Figure 3. The seven current segments when evaluated against the three criteria (segment attractiveness, strength, and synergy) which in turn are weighted by their importance to the accomplishment of the four objectives (weighted by their importance for the short and long term well being of the firm), suggest that three of the segments—D, E, and G—are not very attractive and should be considered as candidates for deletion, or at least destined to receive no incremental resources.

- Five new segments were identified. When evaluated on the three criteria, two of the segments—H* and I*—were viewed as candidates for inclusion into the portfolio and three—J, K and L—as candidates for deletion.
- As a result of the process, a new portfolio of segments was established with segments A, B, C, F, H* and I*.
- The outcome also suggests how much resources to allocate to each segment. Since the dimensions included in the hierarchy encompass both the expected benefits from each segment (as part of the market attractiveness, strength, and synergy criteria), as well as the cost of reaching them and risk, the priorities can be used as a rough guide for resource allocation. This would lead to the following allocation: A = 11 percent, B = 24 percent, C = 13 percent, F = 21 percent, H* = 11 percent, and I* = 20 percent.

Marketing Resource Allocation Decisions

As noted earlier, segment identification decisions, segment selection decisions, and marketing resource allocation decisions are interrelated and are made iteratively. For example, in the preceding section, the AHP process to select segments provided guidelines for resource allocation among segments. Allocation of resources typically involves not only the allocation among segments, but also the allocation of resources to the various marketing mix variables—products, price, distribution, promotion, and advertising.

With the exception of the sales force resource variable, there have been few explicit studies allocating resources across industrial market segments. This is true for resource allocation decisions *within* a major marketing decision variable (e.g., advertising media selection decisions) and *among* variables (e.g., marketing mix programming). One exception is Lilien's (1979) ADVISOR 2 project which models the marketing mix resource allocation decision for industrial products. In addition, Zoltners and Sinha (1980) review 25 integer programming models which allocate sales force resources (e.g., sales call time, number of sales representatives, number of sales calls) to customers, products,

and sales territories. While not all of these models are for industrial products, experience with these and similar models suggest their relevance to the segmentation resource allocation problem.

The basic problem of resource allocation is to decide the mix of resources that generates optimal response (sales, profitability, etc.). How, for example, should salespersons currently covering a market be allocated across segments to optimize their return? Modeling the sales response of each segment to the various market resources is required. Most of the more innovative resource allocation models have been developed in the context of designing optimal product lines. These approaches, which are typically based on conjoint analysis studies among current and potential customers, have been applied to a wide range of industrial situations including computers, telecommunications products and services, pharmaceuticals, and so on (Green and Krieger 1985). In the cases in which empirically-based market response functions are not available, management's subjective judgement, using either decision calculus methods (Little 1979) or the AHP (Wind and Saaty 1980), can be employed.

The disguised AHP example outlined in Figure 3 included, in its original application, a lower level focusing on various marketing strategy options. This allowed management to also identify the marketing programs best suited for reaching the selected segments. A similar application, but for a consumer service, is reported in Dunn and Wind (1983). Consequently, while there are few specific substantive guidelines for allocating marketing resources to segments, the complexity and importance of the decision strongly supports the recommendation to employ a methodology that incorporates managerial judgement, empirical data derived from both econometric market response models and experiments, and decisions models (such as illustrated with AHP above).

Implementation Decisions

The segmentation decisions discussed thus far are often made with little concern for implementation. Yet, the pitfalls involved in implementing a segmentation strategy should be recognized in advance, and remedial actions planned—even to the extent of revising the other segmentation decisions.

The problem of implementation has been considered with respect to the development of marketing models (Naert and Leeflang 1978), consumer segmentation (Young, Ott and Feigin 1978, and marketing management in general (Bonoma 1984; and Davis 1982). While the implementation of segmentation strategies can benefit from such guidelines, there are implementation problems that are unique to industrial market segmentation. For example, if a firm organizes its sales force on the basis of seven geographic territories, a macrosegmentation that results in two segments across the seven territories would require a re-allocation of efforts to the 14 segments. If

additional analysis results in the identification of two microsegments within each macrosegment, a re-allocation to 28 microsegments would be required. The extent to which the existing sales force composition and structure can be allocated to these newly defined segments poses implementation problems rarely studied in the literature, yet of considerable importance to managers. Lodish (1980) and Maiers and Saunders (1990) are among the few who have provided cases studies and models of these problems.

Additional implementation problems with industrial market segmentation strategies include difficulties and costs in designing and implementing multiple strategies aimed at more than one segment, difficulties in identifying media through which advertising can be targeted, the cost and difficulties in designing different messages for each segment, and of altering distribution channel relationships and sales force practices to service newly defined segments. Given the improved communication within markets (among segments) it is often difficult to separate the various segments. The impact of these and other implementation issues on a firm's ability to segment markets and achieve its overall corporate strategy must be assessed and creative implementation strategies sought. This often requires consideration of human behavior.

The involvement of multiple individuals with multiple personal and organizational goals can enhance, or possibly derail a thoughtfully developed segmentation strategy. The need for tackling human resource implementation problems has been identified in the strategy literature and has been put into practice by such consulting firms as McKinsey with its seven S's—strategy, structure, systems, shared values, skills, staff, style—(Peters and Waterman 1982). Brown, Shivashankar and Brucker (1989) propose a multidisciplinary "segmentation team" to guide and facilitate the implementation of a segmentation approach. While the difficulties of getting things done through other people are well documented in the management and organizational behavior field, a careful planning of the implementation phase is as important as the planning of the segmentation strategy itself (Bonoma 1985). Given the need to *plan* both the segmentation strategy and the implementation strategy, the critical role of high quality and timely information as input to the segmentation decision process requires special consideration of a segmentation research program.

SEGMENTATION RESEARCH

The quality of a segmentation strategy and its implementation depend largely on the quality of information available for the five segmentation decisions. From a manager's point of view, the concern with implementing quality segmentation research involves: (1) establishing a clear definition of the segmentation problem, (2) recognizing alternative research approaches for the segmentation problem, and (3) selecting a particular research approach.

Segmentation Problem Definition

Segmentation problem definition is probably the most crucial, yet most neglected area of segmentation research. This is where managers should develop a segmentation model that hypothesizes possible bases for segmentation as well as possible descriptor variables (Wind and Thomas 1979). As suggested earlier, the selection of specific bases for segmentation depends on the way segmentation results are to be utilized (e.g., positioning, new product development, pricing, etc.). Since this leaves management with numerous possible bases for segmentation, and since most situations involve more than a single basis for segmentation, the model specification task is not trivial. Consequently, the design of an appropriate segmentation model is very complex and managers should give careful consideration to situation-specific market segmentation issues, and in particular to factors such as:

- *The dynamic nature of all markets and the opportunities and problems created by time differentials.* Many segmentation strategies, especially those involving new products, involve a current segmentation decision based on data from prior periods and decisions that will be implemented at a future time. During this interval (possibly years in length) numerous market changes can occur, including the composition and size of the various segments. These dynamics require explicit consideration in the segmentation research model.
- *The uncertainty and risk involved.* Most segmentation studies tend to be deterministic. Yet, the environmental changes in buyer needs, competition, and other forces generate uncertainty and risk that should be factored into the research problem definition.
- *The interdependence of segmentation and other marketing and business decisions.* To reach its potential, segmentation should be linked to the entire marketing and business strategy of the firm. This requires that segmentation studies include items related to other marketing and business strategy decisions of the firm, and that the results of such studies be incorporated in marketing and business planning simulations, and resource allocation models (Wind and Thomas 1990).

Alternative Segmentation Research Approaches

Market segmentation studies require research designs that are responsive to the requirement of the segmentation model and the five decisions. The more thorough the segmentation model, the greater the likelihood that "standardized" research procedures will *not* be appropriate and the more creative and imaginative research approaches will be required. Whatever the segmentation model developed, managers can choose from two general approaches to develop useful input to segmentation decisions (see Figure 4).

1. *Adaptive Experimentation:* First, no initial primary research need be conducted, and managers may proceed into the market in an "adaptive experimentation" mode. This could take two directions. In a general "breakdown" approach, managers could start with the whole market, and through promotional efforts begin to identify the nucleus of a customer market which may characterize the target segment. For example, the effective use of direct mail promotions may identify responsive potential customers. Pursuing this responsive group with additional promotional efforts (with or without selective market research to identify their characteristics) may lead to a clear definition of various market segments and a modified marketing program. In a "buildup" approach, alternative marketing programs aimed at a number of potential segments could be launched. By obtaining responses, evaluating the effectiveness of the initial effort, and revising the program, attractive segments can be identified and built.

2. *Formal Research:* The more popular segmentation research approaches use formal marketing research methods that utilize primary and/ or secondary data sources. Wind (1978) describes these and some of the newer procedures (such as componential and flexible segmentation) in greater detail and also considers numerous issues involved in conducting segmentation research (e.g., the unit of analysis—individual vs. a buying center vs. an organization). While sample-based primary research is widely used, the availability of new information and computer-based technologies opens up the possibility of conducting primary research on the *universe* of interest. This is feasible with the generally smaller sized market universes in industrial markets. For example, there are only about 7,000 hospitals in the United States that can be placed in an evolving data base. Data collected on a regular basis for each hospital can be input over time into the data base that allows for a segmentation buildup approach; that is, individual organizations are grouped into segments (based on their needs, behavior, or other desired basis for segmentation), and the results of any marketing effort directed at them (e.g., sales call, direct mail, etc.) are recorded in the data base.

The possibility that multiple research approaches outlined in Figure 4 might be undertaken stimulates the need for ways to link numerous data bases and obtain easy computer access to the output of the segmentation analyses as input to the segmentation decisions. Developments in data base and decision support technology and segmentation approaches should be merged to generate useful new (and creative) research approaches for segmentation decisions.

Selecting a Segmentation Research Approach

The selection of a segmentation research approach is dependent on the segmentation model, the availability of data, cost, and time considerations.
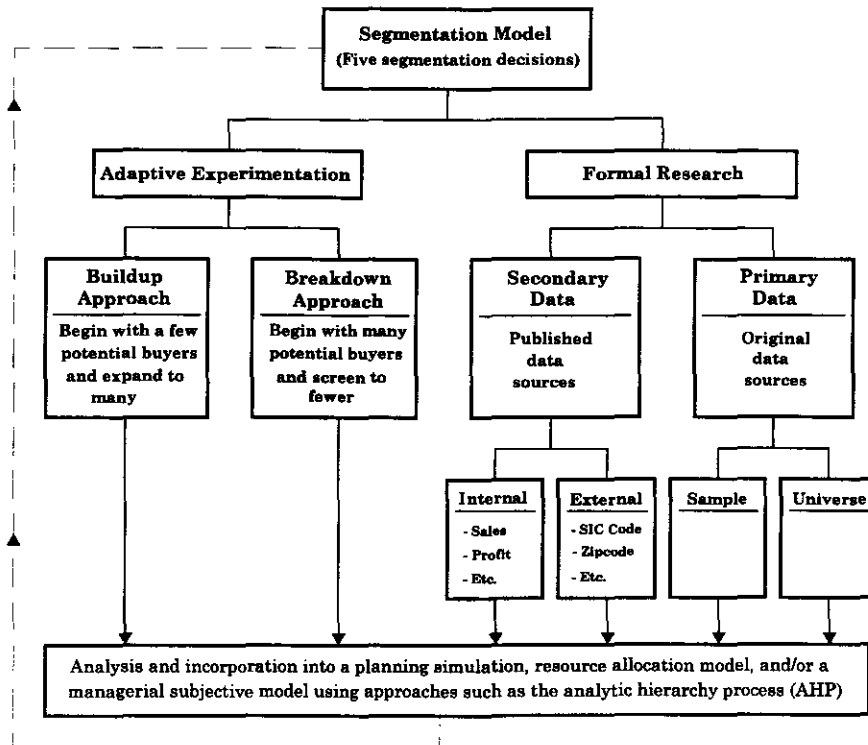
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│      └──────────────────────┘                    └──────────────────────┘
│        ┌───────────┴───────────┐                  ┌──────────┴───────────┐
│   ┌───────────┐  ┌───────────┐          ┌───────────┐  ┌───────────┐
│   │  Buildup  │  │ Breakdown │          │ Secondary │  │  Primary  │
│   │ Approach  │  │ Approach  │          │   Data    │  │   Data    │
│   ├───────────┤  ├───────────┤          ├───────────┤  ├───────────┤
│   │Begin with a few│ │Begin with many│      │ Published │  │ Original  │
│   │potential buyers│ │potential buyers│     │   data    │  │   data    │
│   │and expand to│  │and screen to│         │  sources  │  │  sources  │
│   │    many    │  │   fewer   │          └───────────┘  └───────────┘
│   └───────────┘  └───────────┘
```

	Buildup Approach	**Breakdown Approach**	**Secondary Data**	**Primary Data**
	Begin with a few potential buyers and expand to many	Begin with many potential buyers and screen to fewer	Published data sources	Original data sources

Internal	**External**	**Sample**	**Universe**
- Sales	- SIC Code		
- Profit	- Zipcode		
- Etc.	- Etc.		

Analysis and incorporation into a planning simulation, resource allocation model, and/or a managerial subjective model using approaches such as the analytic hierarchy process (AHP)

Figure 4.   Approaches to Segmentation Research

The close interrelationship between segmentation strategy, the marketing mix program, and the overall business strategy suggests the need for interactive procedures in selecting an approach. In addition, the stage of a product in its life cycle may impact the selection of a research approach.

1. *Developing Interactive Research Approaches:* This recognizes the need to expand the hierarchical approach of identifying macro-and microsegments discussed earlier, to a "multiple-stage interactive" approach. Such an approach requires an easily accessible data base that is explored to find the groups of potential buyers with the greatest sales response to marketing efforts. Since these groups may not be reachable targets nor meet other criteria, the process can be repeated. A multiple-stage interactive approach would not limit a market's segmentation to organizational descriptors (macrosegments) alone, but would probe for improved responses to marketing stimuli, while exploring new marketing mix variables and seeking an "optimal" segmentation that identifies the best target segment(s) for any given marketing program. While attractive, this approach is limited by the composition of the data base derived from the research approaches. Determining the design of the data base, how it can be maintained, updated and analyzed, and how one might use the opportunity to go "on-line" to collect and analyze the data are issues that need to be considered. Given the advances in computer technology, software for data base management, and availability of data on a universe of individual organizations, such an approach is quite feasible and could revolutionize industrial market segmentation.

2. *Product Life Cycle:* Segmentation research methods for new products might differ from those for existing products. For new products or services without an existing user or customer base, flexibility may be needed in selecting a research approach. Multiple methods may be needed to understand the segmented structure of the market and to be able to adjust new product design accordingly. Furthermore, the link of the segmentation research to diffusion modeling is critical. For existing products, it is important to evaluate user-based segments. This may involve use of a secondary/internal analysis, followed by a sample survey of user groups to identify the characteristics of these segments. The rate at which the market grows or changes for the products in question indicates the frequency of market surveys. For example, a panel survey design might be employed in rapidly growing markets to assess the changing segment structure.

To summarize, the selection of a research approach depicted in Figure 4 is highly situational. If formal marketing research is not conducted (or it is, but not analyzed by segments) or if time pressures prevail and emphasis is on immediate implementation, then an adaptive experimentation approach may be practical. Alternatively, if the value of formal research has been accepted,

carefully designed primary and secondary marketing research may be desirable to identify segments. A more desirable approach however is the design of a segmentation research program that incorporates multiple methods and uses the output together with specific models to support the segmentation decisions.

EXTENDING THE SEGMENTATION CONCEPT

In the marketing literature, in practice, and in the discussion so far, segmentation has been limited to the segmentation of "customer" markets. Yet, the concept applies to all heterogenous populations and can and should be extended to the other stakeholders of the firm—all those who have a "stake" in its survival and growth.

Consider, for example, the firm's own sales force. Most large industrial firms employ thousands of sales people. These sales persons vary considerably in their performance. The 20/80 rule often applies to them as it does to the customers (i.e., 20% of the sales force often accounts for approximately 80% of the profits). In multi-product firms they often tend to sell different mixes of products. They differ in their family life cycle stages and hence have different financial and time needs (some are still worried about college education for their kids while others are singles, etc.). These and other differences among the sales persons of any firm suggest that the traditional approach, in which a single sales strategy and compensation is employed, is suboptimal. To fully benefit from one's sales force it is critical to segment it.

The segmentation of the sales force based on needs, benefits sought, expertise, perceptions and preference, or any other relevant characteristics could lead to the identification of homogenous segments and the design of separate strategies toward them. In fact, in any situation in which management relies heavily on a sales force, a dual marketing strategy should be developed— one for the (target segments of) customers and a corresponding one for the (segments of the) sales force. Obviously, these two strategies should be coordinated and integrated. Furthermore, a segmented strategy toward compensation is also desirable. To implement it while avoiding discriminatory practices requires the use of a compensation system with a number of options relying on a self-selection strategy in which the various sales people could select the option most appropriate for their needs. While the segmentation of the sales force and the resulting segmented strategies are likely to meet considerable resistance, future research needs to address whether the benefits outweigh the difficulties and cost involved.

Similarly, a segmentation strategy can benefit the firm's dealing with its other stakeholders. In an earlier paper, Wind (1979) described a segmentation of security analysts and portfolio managers that led a firm to better understand the *criteria used* in evaluating firms in their industry, and their perceptions

of the given firm and its competitors. Following a segmentation/positioning study, a strategy was developed to meet the needs of a target segment of security analysts that resulted in a spectacular increase in the P/E ratio of the given firm.

Other stakeholders, such as suppliers, customer service personnel, competitors, government agencies, the firm's own stockholders, and others are often heterogeneous. In all of these cases, understanding the key segments, selecting the desired target segment(s) and designing strategies aimed at satisfying the needs of the selected segment(s) can greatly enhance the firm's effectiveness and productivity. In fact, as the cost of doing business in today's environment increases, a segmented strategy may be essential for any firm concerned with the return on their marketing investments.

CONCLUSIONS

Relative to consumer household markets, the use of segmentation for industrial markets is generally thought to be lacking in sophistication, if at all in existence (Wind 1978; Plank 1985). While this may be true, the opportunities for industrial firms to use the concept are so great that it may result in a "quantum leap" forward by those firms who employ wisely the concept of segmentation (e.g., Gensch, Aversa and Moore 1990). Increasingly, rapid changes in market conditions are conducive for moves toward selectivity/focus and flexibility/learning, hallmarks of a segmentation approach. For example, pressures for increased productivity will force companies to be more selective in their activities. Technological developments facilitate a situation in which business organizations will be directly accessible via computers long before most consumer markets. The new information technologies open the door not only for the development and utilization of "live" data bases of customers and potential customers, but also to improved direct access to customers. Coupled with flexible manufacturing capabilities, information technology capabilities, information technology makes it feasible to customize products and services for many segments with "one" customer in each.

However, to take advantage of segmentation opportunities, industrial marketing managers must get more actively involved in assessing the potential for segmentation in their markets. This includes recognizing the issues involved in the five segmentation decisions identified earlier. In particular, it requires a willingness to employ analytical methodologies (e.g., the AHP, decision support systems, multiattribute choice modeling, etc.). In addition, it is essential to develop an understanding of alternative segmentation research approaches and take advantage of some of the opportunities involved in the new information technologies. However, the key to taking advantage of this is recognizing that segmentation decisions are highly situational, and therefore

require careful managerial attention to problem definition and building a conceptual segmentation model to guide the design of a research program.

Segmentation can be, and is for some, a powerful tool for industrial marketing management. In fact, it may be the only way for some firms to survive in industries dominated by a few giant competitors. Further, by extending the analysis and design of segmentation strategies to other stakeholders as well as buyers, creative opportunities may emerge for improved competitiveness. It will be then, that the true value of this potentially useful tool may be fully realized.

NOTES

1. See Kotler (1991) for a more extensive discussion of the specific steps involved in market segmentation. In addition, textbook discussion of market segmentation for business and industrial markets can be found in Haas (1989), Hutt and Speh (1989), and Reeder, Brierty, and Reeder (1987).

2. See Saaty (1980 for an exposition of the theory and applications of AHP.

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