MARKETING AND THE OTHER BUSINESS FUNCTIONS

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I. INTRODUCTION

Research and theoretical development in marketing have borrowed from and relied heavily on the behavioral and management sciences. Concepts from economics, psychology, sociology, cultural anthropology, communication research and political science have often served as the basis for many marketing concepts and theories. Similarly, statistical tools and research methods from mathematical economics and psychology as well as modeling approaches and techniques of operations research have served as the impetus for the current set of tools used by marketing researchers and scientists. In contrast to this strong interdisciplinary orientation, which characterizes current research and theory in marketing, the marketing literature has neglected the theoretical and research implications of the interrelationship between marketing and the other business (management) functions.

The interface between marketing and the various management functions takes

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two major avenues. First, in developing a business plan, it is essential to coordinate the marketing component with the other functions of the firm; i.e., the marketing plan should be coordinated with the financial, production, procurement, personnel, R&D plans and the short and long term corporate strategies and objectives. Furthermore, marketing plans should be consistent with the financial and accounting practices of the firm, be in accord with the firm's personnel and procurement procedures, in line with the specifications of the legal department, and aimed at achieving the corporate objectives. Second, it is essential to incorporate marketing inputs in the other corporate plans (e.g., financial, production, procurement, R&D and personnel) as well as the overall short and long term plans of the firm.

The objectives of this chapter are to outline briefly some of the major interdependencies between marketing and the other business functions and to suggest some of the implications of these interdependencies for the development and implementation of marketing theory and research, and in particular, to the new product development area.[1]

II. SOME INTERDEPENCENCIES BETWEEN MARKETING AND OTHER BUSINESS FUNCTIONS

No single chapter can attempt to cover all interrelationships between marketing and the other business functions. All marketing decisions—whether related to products, pricing, distribution, or promotion—are affected by other business functions. Similarly, most other business decisions (such as R&D, production and procurement) and the overall corporate strategy are strongly influenced by a variety of marketing considerations and inputs.

A comprehensive understanding of the web of interrelationships between marketing and the other business functions requires predominantly a *recognition* of the importance of identifying and understanding the nature and magnitude of these sets of interrelationships. This section illustrates some of these interrelationships.

A. Finance and Marketing

All well conceived marketing plans include a major *financial* dimension. Cost and profit history for the business (a brand, product, product line, etc.) in question (in dollars, percent of sales, or return on investment) and a pro forma financial statement and budgets for each business and its related marketing strategies are necessary components of any marketing plan. Profitability analysis and budgeting are key aspects of marketing planning and control which require the resolution of important financially oriented issues such as the definition of profits (e.g., return on investment, return on equity, return on assets employed, return on sales, etc.) and the identification of the controllable determinants of profits (e.g., inventory valuation, taxes, etc.).

Many marketing decisions can and should be viewed as investment decisions. Whenever a new product decision is made, the financial tools and criteria used to evaluate any investment (e.g., net present value) should be utilized. The *investment* view of marketing decisions should not be limited, however, to new products and should include advertising, pricing, promotion and distribution decisions. An insightful discussion of how to employ investment analysis approaches in marketing is found in Anderson (1980).

The investment view of marketing decisions, despite its theoretical attractiveness, is not as widespread as one would like it to be. Furthermore, even in cases in which it is employed, the payback method is still a dominant factor (see, for example, Kirpalani and Shapiro, 1973) despite its shortcomings when compared to the more theoretically sound net present value approach.

Capital allocation to marketing efforts should not be based only on the evaluation of the expected return from marketing activities (e.g., new product or advertising campaigns) and possible deviations from this return. Approaches have been developed which take into account the expected uncertainty. Van Horne (1969), for example, proposed a method, within the capital budgeting framework, for evaluating new products according to their marginal impact upon the resolution of uncertainty patterns for the firm's total product mix.[2]

Another area to which financial analysis can and has made substantial contributions is the evaluation of mergers and acquisitions. Given that a firm can achieve its growth objectives either by internal product development or by product, technology, or business mergers and acquisitions, the financial inputs to these decisions are of considerable importance. Historically, the merger and acquisition decisions have received a lopsided financial emphasis leading to a situation in which marketing considerations were overlooked. Yet, any systematic approach to mergers and acquisitions requires *both* marketing and financial considerations (Wind, 1979).

Corporate financial theory can provide a useful and insightful framework for a number of marketing-based corporate decisions. Consider, for example, *portfolio theory* and its conceptual relevance to the firm's product/market portfolio decisions (Wind, 1974; Cardozo and Wind, 1979). Despite the difficulties in direct application of the portfolio approach to the product/market portfolio decisions, the basic concepts underlying this approach are critical foundations for most product/market portfolio decisions.

The marketing-finance interface is not limited to the utilization of financial inputs in the design of marketing strategy or the application of financial concepts and models to marketing models. The development of any financial plans involving capital requirements, cash flow analysis, credit policies, and the like require marketing inputs. Such inputs, especially in the form of sales (cash) forecasts under alternative marketing strategies and environmental scenarios, are essential for any financial planning.

Furthermore, a marketing approach to financial decisions offers a new perspective often lacking in the financial literature. Consider, for example:

- The utilization of the annual report and other financial documents as vehicles for marketing the firm to the financial community;
- The measurement of management tradeoffs between risk and expected return utilizing conjoint analysis or other choice models (Wind, 1974);
- The assessment of the market response function to changes in price, mode of payment, type and level of discount, and credit;
- The application of financial performance measures (such as ROI) to relevant market segments and products;
- The impact of marketing activities (for example, the new product activities of the firm) on investors' expectations and, in turn, on the market price of the stock.

The marketing-finance interface is not limited to just the exchange of concepts and approaches as inputs to better decisions. Marketing can also be used as a major tool for the achievement of financial objectives as in the case of developing a marketing program to sell new debt and equity issues. Furthermore, a marketing orientation is a must for most financial institutions and, in fact, there is an increasing acceptance of marketing as a guiding approach to the development of new services and promotional programs by insurance companies, banks and, more recently, brokerage firms.

Similarly, financial concepts and tools can be used as an integral part of marketing programs. The importance of credit as a marketing mix variable has been long recognized by practitioners. More recently, Anderson (1979) illustrated the use of discounted cash flow analysis as a useful sales technique in industrial markets. Warner & Swasey, for example, has set up a discounted cash flow program to sell and lease machine tools.

B. Accounting and Marketing[3]

Whenever the accounting practices of a firm lead to an evaluation of an alternative course of action (investment in a new product for example) that differs from the economic evaluation of the same alternative, it is obvious that it has an important (negative) impact on the firm's marketing policy. Such a discrepancy, although recognized as undesirable, is not uncommon and should be guarded against.

Managerial accounting procedures have considerable impact on the firm's marketing policies. One of the most critical areas is the firm's cost allocation procedure. Although there is a general consensus that the cause-and-effect objective should be used as a frame of reference for determining the criteria for cost allocation, "the accounting literature is replete with conflicting and not mutually exclusive criteria for choosing a cost allocation base. Among the possible criteria are physical identification, service used, facilities provided, benefits received, ability to bear, and fairness or equity" (Horngren 1972, p. 403). Given that each of these approaches might result in different costs allocated to any given product (or product line) and, hence, affect the product's profitability, it is quite crucial to understand the differences among these approaches, their biases and likely impact on the firm's marketing decisions, and the product's measure of profitability.

The use of fully allocated costs rather than variable costs, which is practiced by some accountants, can result in a distorted picture of product profitability. The justification for using the fully allocated costs as an approximation of the *real, long-run, incremental cost* is somewhat questionable, and its impact on the relevant product and marketing decisions should be examined explicitly in each case. The most desirable approach to the problem of cost allocation seems to be the *contribution approach* (especially if it includes the variable portion of all the marketing and administrative expenses). Yet, one should note that the key question in evaluating any accounting practice is: What difference does it make to the behavior of the managers making specific product and marketing decisions, and how does it change the evaluation of the items under consideration?

The concept of *responsibility accounting* and its implementation via cost, profit, or investment centers is of major importance to both the evaluation of the performance of existing products and the firm's ability to achieve its objectives by providing the appropriate *accounting motivation* to the managers. It is well recognized that accounting practices vary with respect to their effect on management. (For a discussion of the behavioral implications of accounting measures, see Hopwood, 1976.) Hence, the implications of the firm's product and marketing management structure should be considered explicitly.

Many of the managerial accounting practices and approaches are related to those of financial management and can affect the firm's evaluation of new products and other marketing activities. For example, the utilization of *residual income* instead of ROI as a measure of divisional performance (see, for example, Solomons, 1965; Henderson and Dearden, 1966) may have considerable impact on the decisions of whether to accept or reject a new project. As with the other accounting practices, the budgeting approach utilized by the firm has a considerable impact on a number of marketing decisions. Consider, for example, the now popular zero-base budgeting concept (vs. the MBO concept and incremental budgeting) and its implications for marketing planning and allocation of resources among products, markets, and marketing functions and activities.

The importance of an effective marketing-accounting interface is clearly evident if one considers the critical role accounting information plays in the evaluation of marketing performance. Almost all measures of performance (e.g., marketing contribution as a percentage of marketing assets, marketing costs as a percentage of sales, selling or advertising costs as a percentage of sales, etc.)[4] require some accounting information on costs of operation. This requirement for accurate cost information is further complicated by the need to provide marketing management, not only with ongoing feedback on historical costs by product, market segment, or other relevant unit of analysis, but also with forecasts of future costs by the same breakdowns. This is especially critical in periods of high inflation and fluctuating interest rates. It is in this latter area that most current accounting information is most inadequate. The recent SEC requirements for disclosure of revenues, direct expenses, and gross margins by product line and major markets (e.g., domestic vs. international) is a move in the right direction if it is the only way of forcing management to collect information on relevant product units by their served market. These disclosure requirements do have their limitations in terms of revealing important competitive information and likely antitrust action (if a company dominates specific market segments). These requirements, even if widely accepted, do not solve, however, the problem of the need for forecast data and not only historical data.

C. Production and Marketing

The link between production and marketing is also a dual link. On the one hand, production capabilities determine the number and type of products which can be marketed and, at the same time, an accurate sales forecast for the product line is essential for efficient production operations.

Given the fluctuations and uncertainties in the demand of most products and the difficulties this creates for a smooth and efficient production operation, management can undertake two major strategies: (1) change the current production capacity by changes in current resources (e.g., overtime, second shift, etc.), efficient inventory management, or some form or another of subcontracting; or (2) influence the nature, level, or timing of demand to conform to the firm's production constraints. This latter strategy can be achieved by appropriate use of marketing strategies such as advertising, consumer and trade promotion and deals, and deletion or addition of products which help smooth production and match it with demand. The implementation of such a strategy requires, however, detailed information on the market response functions to these variables.

The interdependency between marketing and production is especially evident in the development of new products. The size of new production facilities depends on marketing research based estimates of the demand for the new products and the likely time and space distribution. Furthermore, since a new product could cannibalize existing products, estimates of the magnitude of cannibalization should be made to help adjust the production schedule of current products.

In understanding the nature of the marketing-production interface, it is important to identify the basic conflicts between the two functions. Production strives for efficient production runs which implies long runs, few models, relatively

simple models to produce, and (what they might consider) reasonable quality control. Marketing, on the other hand, would rather see shorter production runs with many models; they are less concerned about the ease of production and would like to minimize the possibility of any product failure and, hence, tend to have higher quality control standards.

The resolution of these and other conflicts between production and marketing has, of course, significant cost implications for the firm. It is desirable, therefore, that the specific solution be based on explicit consideration of the cost and benefits involved. Both functions should attempt to answer questions such as, "Is the return on investing in a very tight quality control system worth the cost of such a system, or will the firm be better off investing in some other activity?"

D. Customer Service and Marketing

Many consumer and industrial products require a considerable amount of pre- and postpurchase service. Although service can and should be viewed as one of the basic marketing tools which can often determine the fate of the firm's marketing efforts, it is frequently not under the direct control or influence of marketing. It is essential, therefore, to consider explicitly the service component, assess empirically the importance of its various ingredients to the relevant stakeholders (e.g., consumers, channel members, government, etc.), and coordinate it with the rest of the firm's marketing offerings. In fact, in some of the more sophisticated marketing organizations (e.g., IBM, Kodak), the service function is fully integrated into the marketing organization.

The service department is often the address for any consumer (and occasionally trade) complaints. Whether they solve these complaints satisfactorily or not, the number and type of complaints are important input for the firm's marketing decisions and can often offer helpful suggestions for product modification or new product ideas. Regular and explicit lines of communication should, therefore, be established between service, marketing, and other relevant functions.

E. Procurement and Marketing

Procurement—and the broader function of materials management—has become, in periods of shortages, one of the major corporate functions. Many firms have been modifying their products to substitute scarce raw materials with more available, cheaper, or legally acceptable ones. (Consider, for example, the recent ban on saccharin and its implications for diet soft drink manufacturers.)

Marketing research on consumers' acceptability of substitute components is, thus, an essential input to efficient procurement planning. Furthermore, procurement research aimed at the identification and evaluation of new materials and sources of supply can benefit, in many cases, from closer links with marketing research, which is generally at a more advanced level of development.

Marketing planning requires input from procurement concerning plans to introduce new materials or anticipated changes in production output due to changes in the supply of various raw materials. Consider, for example, the marketing implications to a coffee manufacturer of shortages of coffee and increases in the price of coffee beans. Higher prices for existing brands, changes in the brand's deal strategies, focus on new products with noncoffee additives, and changes in the communication strategies of the firm are only a few of the more obvious implications.

F. R&D and Marketing

The R&D effort of any firm should be closely related to the firm's marketing and new product development efforts. Ignoring the R&D-marketing interface has resulted in many technology oriented firms developing products that are the engineer's and scientist's dream and the marketer's nightmare; since they meet no latent or overt consumer needs. To avoid an R&D effort which is detached from relevant marketing input, it is essential to understand the interrelationship between the two.

The primary R&D-marketing interface centers around the new product development efforts of the firm. Each of the new product development stages, from idea generation to the final product development stage, requires close interaction between marketing and R&D. Even the product design stage, which traditionally has been viewed as the sole domain of R&D, can benefit from marketing research inputs on the product features most desired by various target market segments and the respondent's trade-offs among various product features (Wind, Grashof, and Goldhar 1978; Green and Wind 1975b).

The marketing-R&D interface should recognize the potential contribution of each. Marketing research can rarely discover innovative new product ideas. It can, however, provide insight into consumers' unsolved problems and needs, assess their reactions to product concepts, and help the engineers and scientists in the generation and evaluation of new product ideas. Realistic expectations and an organizational climate which encourages the interface between the two functions and stimulates innovation are essential ingredients for successful new product development efforts.

G. Personnel and Marketing

The personnel function of the firm is concerned with the hiring, training, and management of the appropriate marketing personnel. Although aided in this function by marketing management, the primary responsibility for the marketing personnel process is, in many firms, in the hands of the personnel department. Marketing should collaborate with the personnel department in developing job descriptions, screening candidates, and designing training programs and incentive systems.

Furthermore, marketing research, as the corporate function which specializes in research, could provide valuable help in the design and implementation of a number of personnel research projects. For example, a discriminant analysis can be conducted on the characteristics of the "successful" vs. "unsuccessful" marketing personnel to aid the recruiting and training functions; a conjoint analysis study can be conducted to establish the relative importance of various features of a compensation system; etc.

Of special interest are some recent efforts to establish the value of the human capital of the firm. The possibility of adding a human capital item to the firm's balance sheet is being explored. If accepted and found to be implementable, it could have wide-reaching implications to all the functions of the firm.

H. Legal Considerations and Marketing

With the proliferation of government intervention, most marketing decisions are subjected to a legal review. Advertising claims are routinely reviewed by the legal function of the firm or agency, brand names require legal clearance, new products often have to be approved by the appropriate government agency (e.g., FDA), pricing policies are often subject to legal review, etc. The legal perspective, despite its growing importance, is often in conflict with the firm's marketing perspective. In fact, in most areas there is a built-in conflict between the conservative orientation of most legal advisors and the more risk-taking orientation of marketing managers.

Consider, for example, the case of brand names. In most of these cases, lawyers tend to advise against the use of a given name if it *might* result in litigation against the firm. Furthermore, whereas marketing would prefer names associated with the product, legally (from the point of view of trademark protections), the preference is for trademarks which are *not* associated with the product.

The basic conflict between the risk-avoiding orientation of legal departments (which try to minimize the number of suits against the firm) and the risk-taking orientation of marketing should not lead, however, to the unquestionable acceptance of legal advice. Many of the legal department's suggestions are just *opinions*. Nevertheless, a good legal department should be able to give a fairly accurate prediction of how the courts might decide a question. The degree of accuracy is dependent on the type of problem and many other factors. For example, a problem which comes within the purview of a well drafted statute should yield a high degree of accuracy. On the other hand, a problem not covered by statute and on which there are no court decisions or conflicting decisions is another matter.

Even though marketing decisions may differ from the legal opinion at times, both may be correct. For example, the legal department might recommend against marketing a new product because of the strong possibility of liability to consumers. On the other hand, other factors such as ability to spread the risk by insurance or product line and profit considerations may override legal considerations.

It is more likely that marketing decisions will conform with the legal opinion if the marketing of the product involves possible violation of criminal statutes instead of possible civil liability. A company would be in a rather difficult position if it were prosecuted for violation of a criminal statute, and the prosecutor could show that by marketing the product the company failed to follow the advice of its own legal department.

The increased acceptance of marketing research by the courts and various government agencies such as the FTC provides, therefore, an excellent opportunity for constructive interaction between marketing and the legal function of the firm. Marketing, especially its philosophical bent toward reliance on empirical research as a guideline for action, has the potential of affecting the outcome of the legal process, not just vice versa. Consider, for example, the heavy reliance of the legal process on affidavits. Whereas, perfectly acceptable from a legal point of view, when examined as research evidence the limitations of this type of input are immediately obvious:

- How, for example, are the subjects from whom affidavits were solicited selected? Do they constitute a representative sample of the relevant universe, or do they represent a subsample from an unknown universe which is sympathetic to the attorney's point of view?
- How are the affidavits solicited? What line of questioning leads to the final affidavit? Given the ease of biasing responses through leading questions, special wording, and sequencing of questions, it is difficult to imagine how legal authorities are willing to accept affidavits without the detailed and exact line of questioning that leads to the specific affidavits.

Given these similar limitations, it is desirable to follow rigorous marketing research procedures in the collection, analysis, and presentation of legal evidence. There is increasing concern about the type of research which is acceptable as legal evidence (see, for example, Morgan 1979) and the distinction between "advocacy research" (which is designed to support the firm's position) and "objective research" (if objectivity can even be achieved).

I. Public Relations and Marketing

Although conceptually public relations is often included as one of the marketing functions, in most firms public relations is not part of marketing. Such detachment of public relations from marketing can lead to a number of undesirable consequences resulting from lack of coordination of the P.R. and the firm's marketing strategies. This coordination of marketing and public relations is especially crucial in today's environment in which the survival and growth of a firm does not depend only on its customers but on numerous stakeholders. The impact stakeholders such as government, suppliers, consumers, and environmental interest groups, members of the financial community, and the mass media might have on the success of the firm's operations calls for a directed marketing effort aimed at all of them. Splitting this effort between marketing and public relations, if the divisions of responsibilities are not clearly defined and the activities coordinated, could lead to a disastrous outcome.

The design of marketing/public relations stakeholder strategies requires considerable input on the needs, problems and expectations of the various stakeholders. Since public relations managers often lack a research orientation and competence, one of the more effective ways of introducing a more research oriented public relations decision making process is to link it closely with marketing and marketing research.

J. Top Management, Strategic Planning, and Marketing

Top management is and should be involved in providing the guidance, inspiration, encouragement, and control of the firm's marketing and nonmarketing efforts. Top management plays a critical role in the design and implementation of the firm's marketing efforts by setting the objectives, rewards, and resources within which the marketing strategies of the firm are being undertaken. Furthermore, the success of many marketing actions—such as new product development—depends on the degree of top management commitment and involvement. At the same time, marketing provides essential inputs to the firm's overall strategies.

A major part of corporate decisions and plans centers around the firm's current and potential products and services which require continuous marketing inputs. Furthermore, for most of their decisions, top management requires information on the response functions to the firm's activities as well as information on the current and anticipated perception, preference, and behavior of its relevant stakeholders (e.g., consumers, retailers, employees, relevant government decision makers, competitors and others). In getting such information, top management can rely on marketing research; and in designing strategies aimed at the various stakeholders, management can and should rely on tested marketing concepts and approaches.

An effective marketing/top management interface is critical for the survival and growth of the firm. In many cases, top management considerations for the strategic development of the firm are void of explicit marketing considerations. Financially guided mergers and acquisitions are surprisingly the rule rather than the exception. Similarly, risk avoidance often characterizes the nature of the firm's new product development efforts. This tends to result in minor modifications of existing products rather than a more vigorous effort to develop innovative new products or employ innovative marketing strategies in going after new (and, hence, higher risk) markets. Marketing's prime responsibility is to be the force which provides top management with a counterpoint of view reflecting marketing considerations. Although marketing provides only one perspective which should be integrated with the financial and other considerations which guide top management decisions, it is an *essential* ingredient of any long term strategic plan. In this context marketing, particularly marketing research, should provide inputs to the corporate decisions concerning:

- The selection of target portfolio of products and markets (based on an analysis of the strengths and weaknesses of the current product/market portfolio and the desired target portfolio in meeting the needs of selected target segments and offering the firm a competitive advantage vs. current and potential competitors. This analysis provides the foundation for the strategic decision of product modification, deletion, and addition as well as market deletion and addition.
- The allocation of effort between internal new product development and merger and acquisition;
- The allocation of effort between short and long range objectives of product and market development;
- The desired corporate image and the strategies to achieve it;
- Evaluation of the strengths and weaknesses of widely referred to planning concepts such as the experience curve, product life cycle, portfolio analysis, etc.

A close coordination and collaboration between marketing and strategic planning is essential. Marketing can offer concepts and approaches which are fundamental to the design of any strategic plan. At the same time, strategic planning does not only borrow from marketing, but can also enrich and increase the relevance of marketing to its clients at the corporate, business and brand levels.

The marketing/strategic planning interface is one of the major challenges facing both areas. It has major organizational design implications, i.e., should there be two separate functions—a strategic planning department and a marketing department—or should they be integrated into a single unit? Such an integration is conceptually desirable, but the appropriateness of this solution for any firm depends on the idiosyncratic characteristics of the firm, its management climate and personnel.

III. IMPLICATIONS OF THE INTERRELATIONSHIPS BETWEEN MARKETING AND OTHER BUSINESS FUNCTIONS TO RESEARCH IN MARKETING

The interrelationship between marketing and the other business functions, as illustrated in the above sections, has considerable implications for the required

nature and direction of research in marketing. Commercially sponsored marketing research activities are frequently undertaken to provide marketing and nonmarketing inputs to other corporate functions or to assess the impact of other corporate decisions on marketing. Dik Warren Twedt, for example, in his 1978 survey of marketing research activities of 798 companies, found that over 80 percent of all firms conduct short and long range forecasting and business trend studies. Close to 70 percent conduct acquisition studies, and 65 percent conduct internal company employee studies. Many of the marketing research studies (even those which traditionally would fall under the jurisdiction of marketing) are conducted by other, nonmarketing research department. For example, sales forecasting is often found in the controller's department, and product tests are often conducted by R&D personnel. This practice can be at least partially ascribed to the conceptual isolation of the marketing discipline from the other business functions. This isolation is evident if one examines the basic (academic) research in marketing, which tends to ignore most of the interfunctional dimensions of marketing studies.

Whereas marketing practitioners and academicians would hardly debate the desirability of adding greater interfunctional relevance to most marketing studies and for better integration of marketing and nonmarketing inputs in the design of management information systems, the question is, how can such interfunctional orientation be implemented? Some of the general implications of the interfunctional orientation are discussed next, followed by a more specific illustrative interfunctional research agenda for the design of an effective new product development system.

A. Marketing Research

The strong interrelationship between marketing and the other business functions requires that, in the design of any marketing research project, the problem formulation and research design stage be undertaken not only by marketing personnel but also with the collaboration of members of other relevant business functions.

The collaboration between marketing and the other business functions is especially crucial whenever it is required to assess and forecast the nature of the response of any relevant audience (e.g., consumers, retailers, etc.) to the marketing (and nonmarketing) strategies of the firm and its competitors. The problem formulation and data interpretation stages should, therefore, be undertaken by representatives of the relevant business functions, assuring greater relevance of the designed research and increasing the likelihood that the findings will be utilized.

The design and implementation of interfunctionally oriented marketing research projects can be facilitated by recent advances in research techniques which enable researchers to provide useful answers to many of the questions of nonmarketing personnel. Consider, for example, conjoint analysis studies (Green and Wind, 1973 and 1975a) which can and have been utilized to help R&D personnel design better products (such as cars, soaps, duplicating equipment, etc.); to help financial and marketing executives determine a pricing strategy (price elasticity, preferred mode of payment, terms and credit, etc.); to help the operations department decide on service levels (for telephone maintenance, for example); to help the personnel department structure a compensation system for both salesmen and managers; to help top management and the financial officers design a better program for communication with security analysts and other members of the financial community; and even to provide top management with a vehicle to determine the weight each executive places on each corporate objective.

B. Marketing Models and Theory

Most of the current marketing models ignore the interface between marketing and the other business functions. A new set of models which incorporates explicitly this interfunctional orientation should be designed. Consider, for example, the models for the determination of the size and allocation of the budget for any marketing variable. How can such models be of value if they exclude, for example, production and inventory level considerations and the cash flow needs of the firm?

In recent years, management scientists have proposed a number of analytical approaches and models for the coordination of intermediate range marketing, production, and finance decisions (Leitch, 1974; Tuite, 1968; and others). Most notable of these efforts is the one proposed by Damon and Schramm (1972), who proposed a simultaneous decision model for the three sets of decisions and assessed experimentally the likely magnitude of the economic benefits from coordinating these decisions.

The Damon and Schramm model is a good example of a rigorous modeling approach to the interaction between marketing, production and finance. However, the marketing model they propose is, as discussed by Welam (1977), somewhat oversimplistic. Further modeling work on the marketing part of the model is, therefore, required.

The Damon and Schramm model does demonstrate, however, the desirability and value of moving from separate functional models (e.g., a separate marketing model) to coordinated models of the relevant functions. Even if one is concerned only with marketing models, the models should incorporate expected profitability, cash flow, and market share, as well as considerations related to production capabilities and scheduling (which, in turn, can affect and be affected by procurement and personnel considerations). The determination of the desired target market segments and the specific marketing decisions of the firm should be based on models which take explicitly into account the interaction between marketing and the other business functions. More specifically, if market segmentation models, for example, are to be of value they should incorporate explicit consideration of the firm's ability, in terms of resources, to implement a segmented marketing strategy (i.e., how many segments can a firm reach effectively?) and the cost of designing and implementing a segmented marketing strategy in terms of production, inventory, logistics, distribution and other relevant costs.

C. Determining the Size and Allocation of Marketing Budgets

The size of any marketing budget cannot be determined in isolation from the requirements of the other business functions. In essence, marketing competes for resources with other possible uses of funds and is subject to the firm's current and anticipated resource constraints.

Similarly, the allocation of resources among marketing activities requires explicit consideration of (1) the likely impact alternative marketing allocations might have on the other business functions (e.g., production services and financial requirements); and (2) the likely impact of alternative ways of allocating resources among the other business functions (e.g., production facilities, etc.) on the requirements for marketing funds.

The marketing budget size and allocation decision should be made, therefore, jointly with the budget decisions of other relevant business functions. Given that, organizationally, marketing is in most cases a separate budget unit, the budgeting process should be adjusted to allow for adjustments due to this interaction and the need to coordinate all business functions with the overall long term strategic corporate plans. A sequential budget procedure with a number of interactions within marketing and between marketing and corporate planning might be considered as one possible solution to this problem. As an example for this approach to the determination of the size and allocation of the marketing research budget, see Wind and Gross (1978).

A more recent approach to the resource allocation decision of the firm is the Analytic Hierarchy Process (AHP). This approach has been applied to a number of marketing decisions including the allocation of resources within the product/market and distribution portfolio of the firm, and to the generation and evaluation of new product options by a diverse group of managers representing four distinct organizational groups—R&D, marketing research, brand management, and an advertising agency—to the generation of marketing mix strategies (Wind and Saaty, 1980).

The analytic hierarchy modeling and measurement process (Saaty, 1977 and 1979) is a recent addition to the various approaches used to measure respondents' (e.g., managers) judgments concerning the relative importance of a set of activities or criteria. The novel aspect and major distinction of this approach is that it structures any complex, multiperson, multicriterion, and multiperiod problem hierarchically. Using a method for scaling the weights of the elements in each level of the hierarchy with respect to an element (e.g., criterion) of the next higher level, a matrix of pairwise comparisons of the activities can be constructed by the relevant group of respondents (e.g., managers) where the entries indicate the strength with which the group perceives one element to dominate the others with respect to a given criterion. This scaling formulation is translated into a largest eigenvalue problem which results in a normalized and unique vector of weights for each level of the hierarchy (always with respect to the criterion in the next level); which in turn (by a principle of hierarchical composition) via a series of multiplications results in a single composite vector of weights for the entire hierarchy. This vector measures the relative priority of all entities at the lowest level that enables the accomplishment of the highest objective of the hierarchy. These relative priority weights can provide the guidelines for the allocation of resources among the entities at the lower levels of the hierarchy.

Since most of the critical marketing decisions involve some resource allocation task, the AHP is especially suited as a *process* for marketing management decisions. The major advantage of the AHP for dealing with the interface between marketing and the other business functions is its ability to synthesize the preferences and judgments of diverse participants reaching an organizational consensus which allows management to (1) generate a set of alternatives reflecting diverse organizational perspectives (or marketing and other functions); (2) reach an "optimal" resource allocation among the alternative courses of action; (3) satisfy a set of multiple objectives which reflect the weights placed on them by the various organizational participants taking into consideration (4) the judges' perceptions of the likelihood of achieving these objectives under alternative environmental scenarios.

D. Marketing Planning and Control

Marketing (and business) planning requires a considerable amount of interfunctional input and interaction. This interaction dominates the four major parts of any planning process:

- Determining the desired objectives. This stage requires input from top management, the management of the relevant Strategic Business Units (SBUs), and the managers of many other relevant business functions;
- Assessing the current position of the company. This stage requires a situation analysis which involves not only the marketing dimensions but also the current and projected performance of the other business functions (under assumptions of various levels of change in marketing strategy, competitive activities, and environmental conditions);
- Generating and evaluating alternative courses of action and selecting the most appropriate strategies. Inputs from other business functions can be helpful at the strategy generation stage. They are crucial, however, at the evaluation (resource allocation) stage which requires the careful examination of the financial, tax, production, procurement, and other implications of various marketing strategies;
- Developing a continuous monitoring system. A monitoring system should provide an early warning system for any changes in performance or environmental conditions (consumers' attitudes, etc.) which might require changes in any of the firm's strategies. Monitoring systems should incorporate not only the objective performance in terms of profits, market share, and sales (Wind and Claycamp, 1976) or attitudinal (positioning) monitoring, but also the monitoring of the performance of the other business functions and the attitudes of their personnel. In designing a monitoring system, consideration should be given to the ability to separate permanent shifts from random deviations in performance.

E. Marketing and Management Information Systems

Since the major implications of the interdependencies between marketing and the other business functions are with respect to the required information and its role in the firm's decision making process, the design of marketing information systems should be undertaken as an integral part of a broader user-oriented *management* information system. Such a system incorporates the marketing information (e.g., sales, share, consensus attitudes, etc.) with other relevant information (company sales, cash flow needs, macroeconomic projections, etc.) providing a single organized and timely source of information to the relevant decision makers.

To the extent that the firm's management information system includes information and models of competitive behavior, marketing (particularly marketing research) can provide the necessary vehicles for the gathering, analysis and interpretation of such data.

F. Design of Marketing Strategies

Interfunctional interrelationships can have two major effects on the design of a firm's marketing strategies. First, nonmarketing developments can and have led to the initiation of specific marketing strategies. Consider, for example, the technological developments in digital watch technology and pocket calculators that led Texas Instruments to slash the prices of both products to around ten dollars and the implication of this pricing decision on the nature of distribution, promotion, and product positioning and the target market segment appealed to. Advertising, distribution and other promotional and marketing strategies have often been triggered by nonmarketing factors. Yet, this tends to be ignored in marketing texts and models.

The second effect of interfunctional interrelationship on the design of marketing strategies is based on the contribution of the interfunctional concept to a better understanding of customers' behavior.

Industrial *buying* decisions, not unlike *marketing* decisions, are made by a number of decision makers within the organization. The concept of the buying center (Wind, 1967 and 1978) was designed to recognize the involvement of more than a single organizational function in the organizational buying behavior process. Similarly, since marketing strategies are often designed by a number of decision makers, it might be helpful to take explicitly into account the multifunction influences on marketing decisions. To date, this multifunctional nature of buying is well accepted, yet ignored when considering the multifunctional nature of marketing decisions.

Our understanding of consumer buying behavior can also be improved if one considers the various functions performed by the family (or more accurately the household's buying center) in the course of a purchase decision. Consider, for example, the financial function, procurement, inventory management, usage and management of a family's products and services, etc.

G. Design of a Marketing Organization

The need for a close interrelationship between marketing and other business functions has major implications to the design of the marketing and corporate organization structure. Interfunctional interdependency requires an organizational design which could facilitate the flow of communication among the various functions, enable the accomplishment of marketing and other organizational tasks, while avoiding unnecessary and dysfunctional conflicts among the various functions.

Whereas a number of organizational designs can meet such requirements, it might be desirable to develop a design in terms of a matrix organization in which the columns are the various functional areas (defined in terms of the most specific levels of functional expertise available) and the rows represent the specific decisions to be undertaken (also defined in terms of the most specific levels practical).

A matrix organization designed to stimulate interfunctional collaboration can be developed for various sets of decisions (such as new product development activities) or for the entire organization. Having identified the required decisions (rows) and the relevant organizational function (columns), it is important to determine the nature and magnitude of involvement of each participant (the cells in the matrix). Once this stage is completed, one can approach the question of organizational design (Galbraith 1977) by identifying the information requirements of each decision and attempting to develop an organizational structure which groups together those activities requiring similar information processing.

Whatever the organizational level to which the matrix concept is being

applied, the organizational designers should take into consideration not only the nature of decisions and activities that have to be undertaken, but also the organizational variables (such as the reward and communication system) that can be employed to achieve the desired level of effective interfunctional interface.

IV. AN INTERFUNCTIONAL RESEARCH AGENDA FOR NEW PRODUCTS

The interrelationship between marketing and other business functions has considerable basic and applied research implications for research in marketing. In the previous section, we briefly examined some general implications of the interfunctional orientation to marketing research, marketing models and theory, determination of the size and allocation of marketing budgets, marketing planning and control, marketing and management information systems, design of marketing strategies and the design of a marketing organization. The purpose of this section is to further explore the specific implications of the nature and magnitude of the interface between marketing and other business functions to basic and applied research for new product development. Exhibit 1, a matrix of the interfunctional involvement in the new product development process, illustrates the importance of the interface between marketing and the other business functions and serves also as an organizing framework for the discussion in this section.

A. Determining New Product Objectives

Whereas there are a number of research approaches for the determination of management objectives (e.g., a brainstorming session followed by a conjoint analysis), there are still a number of unanswered basic research questions:

- From a normative point of view, what *should* the firm's new product objectives be? How should they vary by firm characteristics and other conditions, and how should they reflect the objectives of the various business functions?
- Given that management consensus on the objectives and their importance is not always attainable, should the firm strive toward consensus (and, if yes, how can it be reached), or is it possible to operate under a number of conflicting interfunctional objectives?
- From a normative point of view, what is the best mix of internal vs. external new product development activities, and what are the marketing, financial, personnel, and other factors that determine it?
- Given that new product objectives set boundaries for the firm's new product activities, how should the boundaries be developed? Should they be limited to the current product, markets and resources of the firm or go beyond these?

Exhibit 1. Interfunctional Involvement In The New Product Development Process

<table>
<tr><th></th><th colspan="6">ORGANIZATIONAL FUNCTION</th></tr>
<tr><th>STAGES IN NEW PRODUCT DEVELOPMENT PROCESS</th><th>TOP MANAGEMENT</th><th>MARKETING</th><th>FINANCE</th><th>R&D</th><th>MANUFACTURING</th><th>OTHER: -Personnel -Procurement -Legal, etc.</th></tr>
<tr><td>1. Setting objectives and boundaries as well as the selection of a mix of internal vs. external development</td><td>PRIMARY RESPONSIBILITY</td><td>INPUTS</td><td>INPUTS</td><td>INPUTS</td><td></td><td>INPUTS</td></tr>
<tr><td>2. Idea Generation</td><td></td><td>PRIMARY RESPONSIBILITY</td><td>INPUTS</td><td>PRIMARY RESPONSIBILITY</td><td>INPUTS</td><td>INPUTS</td></tr>
<tr><td>3. Idea/Concept Screening</td><td>APPROVAL</td><td colspan="3">PRIMARY RESPONSIBILITY</td><td>INPUTS</td><td>INPUTS</td></tr>
<tr><td>4. Concept/Product Development</td><td>APPROVAL</td><td>PRIMARY RESPONSIBILITY</td><td></td><td>PRIMARY RESPONSIBILITY</td><td>INPUTS</td><td>INPUTS</td></tr>
<tr><td>5. Concept/Product Evaluation</td><td>APPROVAL</td><td colspan="4">PRIMARY RESPONSIBILITY</td><td>INPUTS</td></tr>
<tr><td>6. Final Product Evaluation & Development of Marketing Strategy</td><td>APPROVAL</td><td colspan="2">PRIMARY RESPONSIBILITY</td><td>INPUTS</td><td>INPUTS</td><td>INPUTS</td></tr>
<tr><td>7. Continuous Evaluation of Product Performance</td><td>APPROVAL</td><td>PRIMARY RESPONSIBILITY</td><td>INPUTS</td><td>INPUTS</td><td>INPUTS</td><td>INPUTS</td></tr>
<tr><td>8. Product Introduction</td><td></td><td>PRIMARY RESPONSIBILITY</td><td></td><td></td><td>PRIMARY RESPONSIBILITY</td><td></td></tr>
</table>

Under what conditions should each strategy be considered in both the short and long run, and how do the multiple (and possibly conflicting) objectives affect the boundary decisions?

- In setting corporate new product development objectives, how should the short and long term objectives incorporate the separate hierarchies of objectives of each business function?

B. Idea Generation

There are numerous approaches to the generation of new product ideas. These approaches can generally be divided into consumer based (e.g., focused group interviews, needs/benefits segmentation studies, etc.) and "expert" based. The "experts" include all those individuals and groups within or outside the organization who do not respond as consumers but rather as *experts*. As with consumer based approaches, idea generation by experts encompasses both unstructured (e.g., brainstorming) and structured (e.g., morphological analysis, environmental trend analysis, etc.) approaches (Wind 1980a).

Given this broad definition of "experts," there are a number of basic questions relating to the interfunctional nature of idea generation:

- Which "experts" should participate in the idea generation procedure? Should they represent their various functions or be selected based on their individual characteristics?
- Given the unique new product development role played in most organizations by R&D personnel, how can their inputs be coordinated with that or marketing and other relevant business functions?
- How can the process and output of the various informal and nonsystematic idea generation efforts, which often take place in various parts of the organization, be incorporated in a systematic and planned idea generation procedure?

C. Idea/Concept Screening and Concept/Product Evaluation

The evaluation of any concept or product should encompass three major sets of considerations:

- Is the idea/concept/product consistent with the corporate objectives and resources?
- Is the idea/concept/product technically, legally, and economically feasible?
- Is the idea/concept/product likely to reach the sales, profit, and share objectives among the selected target market segments?

Whereas the response to the last set of considerations is based primarily on the results of consumer studies (see, for example, Wind 1973), the first two sets of considerations involve a considerable amount of interfunctional interaction. In planning and implementing a system for undertaking these two tasks, a number of questions should be answered:

- Who should determine the consistency of any new idea/concept/product with the corporate objectives and resources?
- Given likely conflicts among different functions in evaluating new ideas/concepts/products, how are these conflicts to be resolved?
- Which organizational function is to take the lead in evaluating the technical and economic viability of the new ideas/concepts/products; and how should the process be coordinated to reflect the appropriate tradeoffs between the short and long term corporate objectives? Furthermore, what specific choice model best describes the corporate evaluation of ideas/concepts/products (is it a lexicographic or other choice model)?
- In cases in which the organization does not have the needed expertise to judge certain aspects of the decision (e.g., legal acceptability, technological feasibility, etc.), how can the firm assure that outside expert opinion is sought? How is such an effort to be integrated organizationally?

D. Concept/Product Development

The responsibility for concept/product development has traditionally been invested in the R&D group. Yet, the increased importance of designing new products which meet the specific needs and solve the problems of potential users requires greater reliance on marketing research inputs. Similarly, the increased magnitude of government regulations requires closer links between R&D and the legal function. Further complications for product design stem from increased corporate needs to design new products which respond to (1) the needs of the various business functions (such as the needs of production to achieve greater production efficiency, or forecasts of material management concerning new material developments, etc.); (2) the demands of various stakeholders (e.g., trade); and (3) the need to meet the corporate objectives with respect to target product/market portfolios.

Given the large number of interfunctional interactions in connection with the new product design stage, it is important to address questions such as:

- How to design organizational mechanisms (organizational structure, climate, processes, reward systems, etc.) which will facilitate efficient interfunctional interaction;
- How to develop personnel selection and motivation mechanisms that will

result in new product development (especially R&D) personnel who are not only good professionals in their areas of expertise but also willing and able to interact effectively with other relevant participants and stakeholders;
- How to develop a CPM or other planning method that allows for effective and efficient interfunctional interactions while meeting the overall timing goals of the organization.

E. Final Product Evaluation and Development of Marketing Strategy

Even the development of a marketing strategy for a new product cannot be undertaken in isolation from the other business functions. The nature and magnitude of the introductory marketing campaign should reflect production, legal, public relations, cash flow, and other constraints and be coordinated with the other corporate activities and efforts. Organizational mechanisms should, therefore, be designed to facilitate effective and efficient interaction between marketing and other business functions.

Following the development of the introductory marketing strategy, a final product/market evaluation system should be designed. Whether based on some pretest market simulation procedure, test market, or a regional or national introduction following adaptive experimentation guidelines, a systematic evaluation procedure should be undertaken. This evaluation, if it is to be of value for production and financial planning, should include not only overall sales estimates but their allocation over time and space, the likely cannibalization effects, and the demands the new product is likely to place on the service and other functions of the firm. Such evaluations are also critical for the final "Go/No Go" decision and the determination of the specific new product introduction campaign. The design of an efficient evaluation system would require close coordination among marketing and the other business functions. This places severe demands on the firm's information and communication systems, as well as the development of interfunctional evaluation models.

F. Continued Evaluation of Product Performance

The introduction of a new product requires a careful design of a continuous evaluation system. Such a system should focus on the integration of marketing and the relevant information from other business functions in an integrated feedback system which provides ongoing monitoring of:

- actual sales by type of product, distribution, market segment, and area;
- market share and brand switching data by market segment;
- information on product returns by type of product, distribution outlet, etc.;
- production and other costs related to the manufacturing, delivery, and marketing of the products;

- consumer and trade complaints;
- attitudes toward the product and its positioning;
- actual implementation of marketing activities, e.g., the actual (vs. planned) advertising schedules, distribution coverage, couponing activities, etc.;
- the reactions of the other stakeholders (government, financial community, etc.) to the introduction of the new product and the likely impact of their reaction on the product's performance.

G. Product Introduction

The planning of the new product introduction campaign requires a considerable amount of multifunction coordination effort. Production levels and schedules should be set in accordance with the forecasted sales under alternative marketing strategy levels. The desired product level and schedule, in turn, places severe demands on procurement, personnel, and engineering research. Often, new products require the construction of new production facilities which places further demands on coordination among a number of corporate functions. All of the new product introductory activities involve financial considerations and, in particular, cash flow planning which should be coordinated with the planned activities for the other product lines of the firm.

In general, the new product development efforts (from the first step of setting objectives through the final stage of actual new product introduction) require development of:

- new interfunctional evaluation models;
- organizational mechanisms to facilitate the necessary coordination among the various business functions;
- a cumulative information base (based on substantive findings) and generalizable models and theories reflecting the criteria used by marketing and nonmarketing executives in making decisions affecting the marketing decisions and activities of the firm. Are these criteria consistent with role perceptions and expectations? To what extent are they sensitive to organizational, personnel, situational, and environmental conditions?
- a normative theory of new product development which would provide the necessary guidelines for the resolution of interfunctional conflicts with respect to various aspects of the new product development process.

V. CONCLUDING REMARKS

The dependency of many marketing decisions on considerations involving other business functions, although widely recognized by marketing practitioners, has been largely ignored in the basic (academic) marketing literature and research and has been left primarily to the business policy literature. Yet, effective and efficient marketing decisions require the incorporation of the considerations of the other (nonmarketing) business functions in the design and implementation of marketing research, marketing models, marketing planning and control systems, management information systems, marketing strategies and marketing organization.

Research in marketing should attempt to find solutions to the inherent conflict between marketing and many of the other business functions. (For a discussion of these conflicts, see Kotler, 1972.) Marketing models, research approaches, concepts and organizational arrangements which incorporate explicitly marketing and nonmarketing considerations should be developed and tested. The analytic hierarchy process discussed earlier, for example, can be used to bring together people with diverse organizational (and reference group) perspectives. This could help lead to greater integration of marketing and the other business functions. A complementary approach to the stimulation and better coordination and integration of marketing and the other business functions is via the organizational reward system. The importance of the reward system in directing (and understanding) the behavior of organizational buyers has been demonstrated (Wind, 1971). It might be beneficial, therefore, to explore the extent to which top management can design a reward system to stimulate the needed interface among the various business functions.

Basing marketing decisions and activities not only on marketing considerations but also on relevant considerations from the other business functions while keeping up to date with developments in these areas, could provide new guidelines to many of the basic and applied marketing research efforts. It would also offer new concepts and methods which marketing could borrow from and modify. Greater interface between marketing and the other business disciplines would not only enrich our discipline, but could also lead to greater relevance of the results of research in marketing.

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NOTES

1. The interface between marketing and other business functions is as critical in the management of existing products as it is in the design and management of new products. The focus in the last section of this paper on the new product development area should, therefore, be viewed as illustrative.

2. The "portfolio risk" approach suggested by Van Horne (1977) is only one of a number of approaches to risk evaluation which appear in the finance literature. For a discussion of some of these approaches, see, for example, Findlay, Gooding, and Weaver, 1976.

3. For a somewhat different approach to the marketing/accounting interface, see Lusch, 1979.

4. For a review of various marketing ratios, see Westwick, 1973.

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