NEW PRODUCTS -

MINIMIZING RISKS AND MAXIMIZING CREATIVITY

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November 1974 752-74

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Abstract

Risks can be minimized and creativity can be maximized by combining traditional qualitative and quantitative market research techniques with new management science models in a structured sequential process of development to produce a continuing stream of successful new products.

MANAGEMENT'S RESPONSIBILITY FOR NEW PRODUCT DEVELOPMENT

Management has the responsibility to develop an organization and decision structure that will allow innovation to flourish and to create an atmosphere of entrepreneurship so that profitable growth can be achieved through new products. However, at the same time management must reduce the risk inherent in any new venture.

Developing a disciplined and creative atmosphere is not an easy task. Organizations are not basically creative. They spend 95 percent of the corporate energy in maintaining established businesses and even in the new product development area spend most of the time and energy on routine operational aspects rather than concentrating on developing the idea to its fullest creative potential. The dominance of the operational mentality of the corporation requires that management institute specific processes and systems for new product development to manage creativity and foster innovation.

The long run survival of the organization's growth and profitability is dependent upon effective management of the creative and risk aspects of these processes and systems. Successful companies manage the future, others are managed by the present and overwhelmed by the future.

The New Product Record

The record of new product introductions would indicate that even some of the most sophisticated corporations have not been able to effectively manage the future. Across many industries, 33 percent of new products introduced in the market fail and 70 percent of the

resources expended in development, testing, and introduction are spent on products that are not successful in the market.[1] In some industries much higher failure rates are experienced. For example, in the consumer package goods area over 80 percent of all new products fail.[2]

The Future Facing New Products

Although developing products has been difficult in the past, it will be even more difficult in the late 70's and in the 1980's because:

- markets are being saturated with many product alternatives.
- more firms are searching into areas outside current operations.
- firms are making significant commitments to internal growth via new products development.
- rapid changes in technology are shortening life cycles of products.
- environmental constraints from government, consumer, and labor are increasing.
- consumers are becoming more sophisticated buyers.
- cost of capital is increasing.
- shortages of resources critical to new products are growing.

[1] Management of New Products, (Booz, Allen, and Hamilton, 1968) p.11

[2] John T. O'Heara, Jr. "Selecting Profitable Products", Harvard Business Review (January-February, 1961), p.83.

The conclusions from these trends combined with the recognition of management's responsibility to produce innovation dictates the need for a new structure to: 1. maximize creativity, 2. reduce failure rates, and 3. produce an ongoing stream of new product innovations to insure corporate growth.

THE EXISTING RESPONSES

Most firms have implemented a development process that is relatively structured and sequential in nature. In reality, however, most of them have tended to operate in the following modes:

1. "Who's got a new idea today" - - In spite of the structured process on paper, many firms operate on this totally spontaneous and undisciplined approach. This process is not characterized by an organized search, but rather somebody, many times top management, comes up with an idea. The idea is implemented with a minimum of testing and evaluation.
2. "Here comes the guy in a white coat" - - This is characterized by a firm with an extremely strong Research and Development Department, or in an industry which is technologically oriented. The problem with this approach is that the concept can have very little meaning to the consumer in spite of the technical brilliance of the idea. From 60 to 80 percent of successful technical innovations in a large number of fields have been in response to market

needs and demands rather than in response to new scientific or technological advances.[3]

3. "Me too" - - The firm has very few ideas and therefore copies competitors' new products and follows them into the marketplace. The problem is the copying firm enters with a parity product which at best produces marginal profits.
4. "Let's run it up the flag pole and see who salutes it" - - A systematic generation of large numbers of ideas which are not well thought out or well screened prior to heavy marketing investments.

Some firms have used these approaches with some degree of success in the past. But the conditions that allowed these piecemeal approaches to succeed will not persist in the future. Firms that continue to utilize these antiquated approaches without changing to meet the demands of the new marketplace are doomed to high failure rates and low levels of creative output.

A PROPOSED RESPONSE

In order to cope with the emerging problems of the future, a five step sequential development process is recommended. The stages are:

1. Idea generation
2. Screening
3. Refinement and evaluation
4. Testing
5. National launch

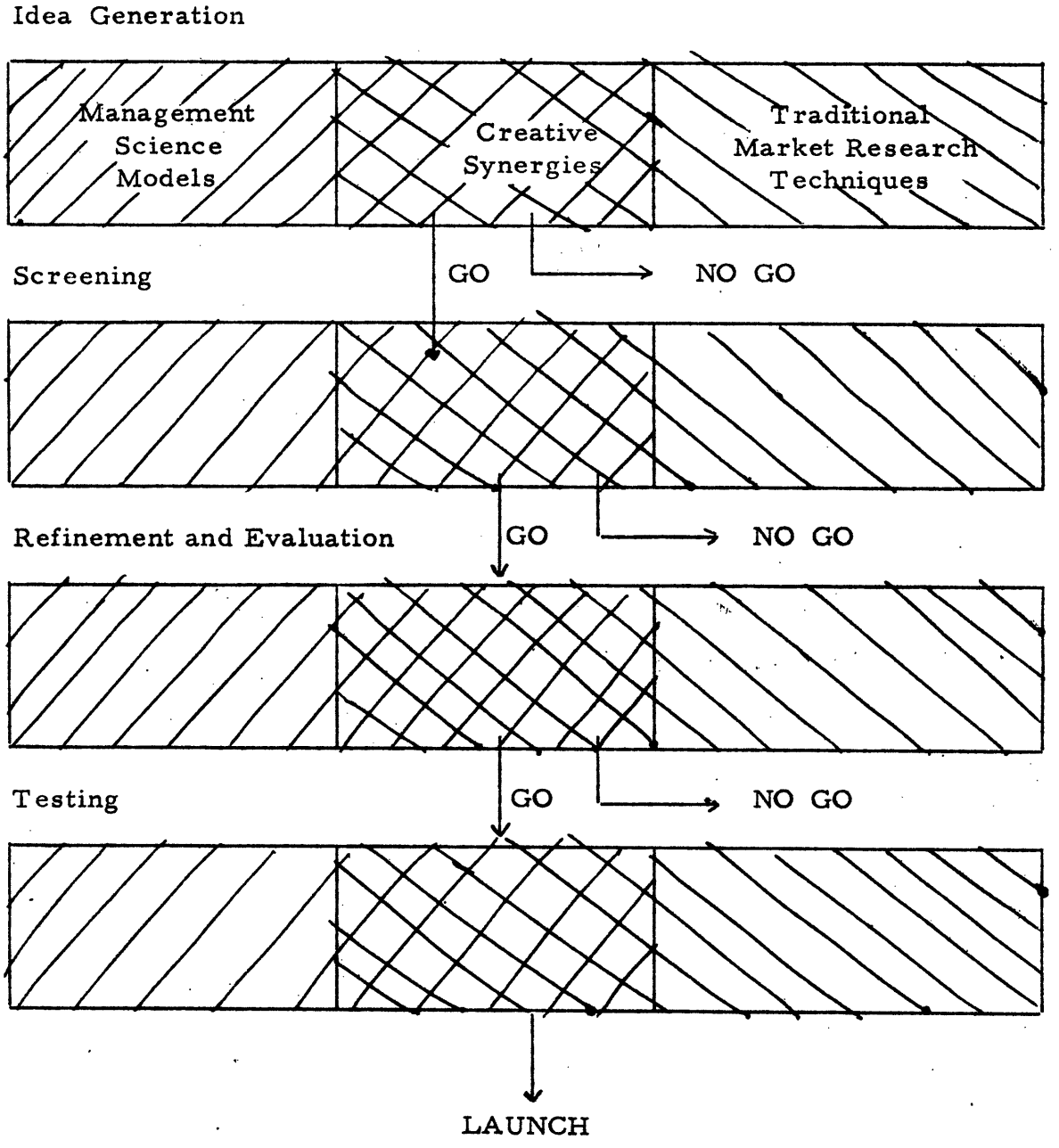
[3]James Utterback, "Innovation in Industry and the Diffusion of Technology", Science Vol. 183, pp. 620-626.

The enumeration of the steps in the new product development process may not look significantly different from some processes currently in use or the ones that resulted in modes of operation outlined above. But what is different is the integration of traditional qualitative and quantitative marketing research techniques with the new management science models at go/no go decision points in the process. This integration creates a dynamic synergy that maximizes creative output, reduces the risk of product failure, generates a meaningful sales and profitability forecast, and improves strategic decision making. See Figure I.

In order to demonstrate how this integration achieves these results, the method by which this process is implemented within the consumer package goods industry will be discussed. The consumer package goods field is most appropriate because conditions that represent the difficulties of the future for many other markets have already arrived: markets are saturated, firms are invading areas outside current operations, commitments to new products are at high levels, rapid changes shorten product life cycles to 2 to 5 years, extensive government regulation and consumerism are present, and new products must pay back investment in 2 to 3 years.

FIGURE I

NEW PRODUCT DEVELOPMENT PROCESS



MEETING THE FUTURE NOW IN CONSUMER PACKAGE GOODS

In this section the proposed process will be examined on a step-by-step basis. See Figure II. At each step the management science technique and the traditional marketing research will be described and the synergies that develop will be outlined. All of the following work is based on actual in-use experience in the package goods industry.

Idea Generation

First, opportunity markets are defined and priorities are established. This can be done by identifying company strengths and weaknesses by brainstorming sessions in a venture team, and by listening to consumers talk in focus group interviews.

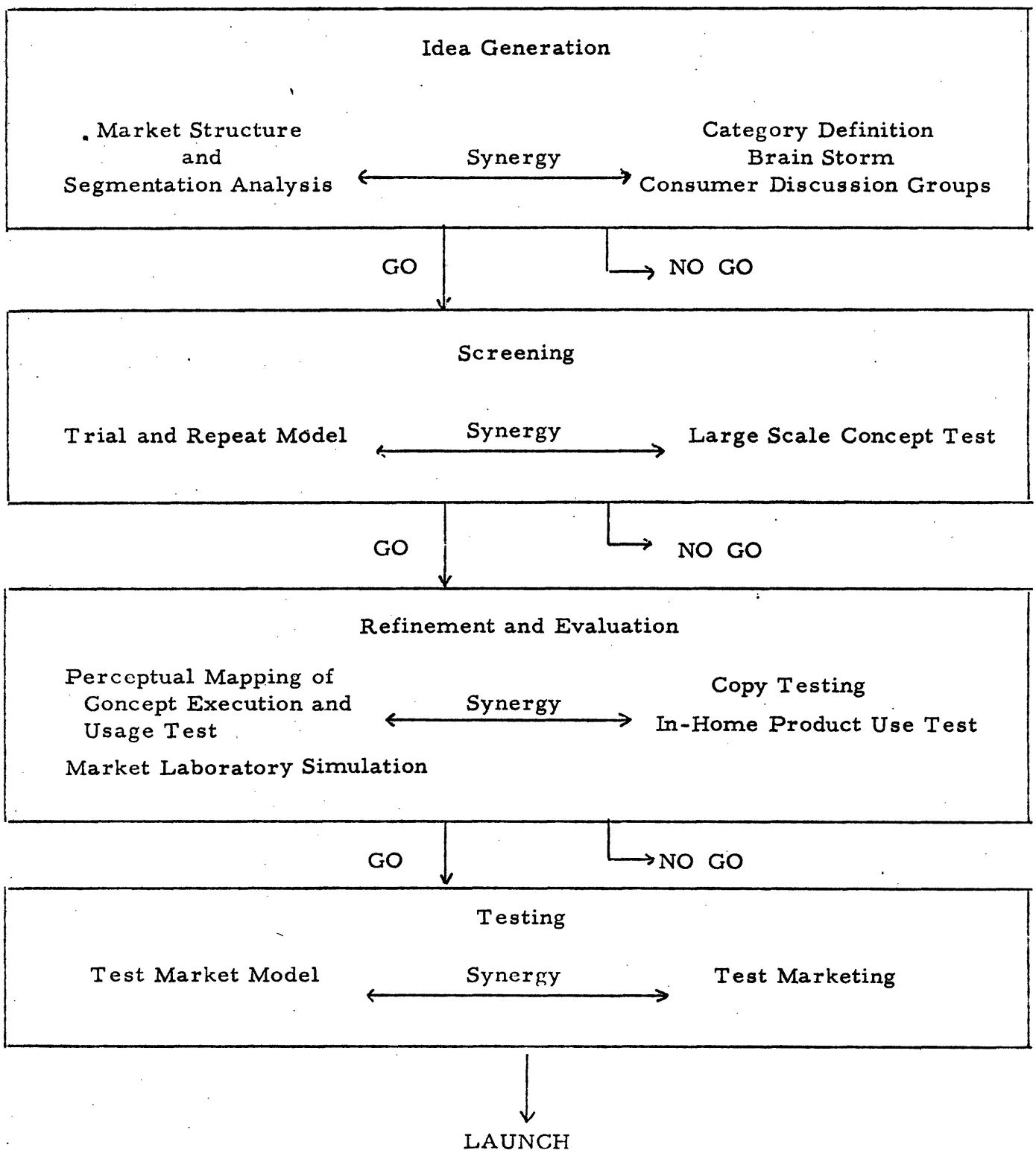
A simultaneous activity is to initiate a management science market structure and segmentation analysis. PERCEPTOR has been used to carry out this analysis.[4] The purpose of PERCEPTOR is to define the critical consumer need dimensions, describe the current position of existing brands in the market, define areas of opportunity and specify the attributes of potential product improvement. When PERCEPTOR is combined with consumer focus group interviews, a better understanding of the market and the consumer dynamics is the result. In this instance there is substantial synergy between the two disciplines.

[4]Glen L. Urban, "PERCEPTOR: A Model For Product Positioning", Management Science (Forthcoming, February, 1975)

FIGURE II

NEW PRODUCT DEVELOPMENT PROCESS -

CASE OF PACKAGE GOODS



For example, in one firm's effort to penetrate an established category ($400 million in sales and $100 million in advertising), PERCEPTOR indicated a new emerging dimension of consumer need that was not being exploited effectively by existing brands, and represented an exceptional new product opportunity. Consumer focus groups were reacting to some preliminary product concepts in unexpected ways. The consumer preferred concepts that the marketing group felt were marginal, while not reacting enthusiastically to the concepts that were presumed to be strong. This brought the project to a halt.

When the PERCEPTOR findings of the new emerging consumer dimension were reported, the apparent inconsistencies of the consumer reaction were understood. The initial marketing group's perception of the market was based on the "old" definition of market structure, but when the focus groups were reexamined with the "new" definition of the market, the consumer reaction was consistent and understandable. As a result, a significant product positioning opportunity presented itself. The synergy between the management science methodology and the focus group work resulted in the creation of a breakthrough new product concept by giving the marketing group a new understanding of the market. Confirming focus group interviews with the new concept validated this new point of view.

Concept Screening

The output of the Idea Generation is a set of innovative product ideas. The next step of the new product process focuses on the financial business aspects of the venture. The task is to create new businesses and profitability performance, not to create just another new product.

First, a traditional large scale market research concept test is run to determine the consumer's perception of important product benefits and intent to purchase levels of the product idea.

The next step is to take the data from the large scale concept test and link it to a trial and repeat purchase model. The SPRINTER Model has been used.[5] The purpose of SPRINTER at this phase is to generate a preliminary forecast of the sales and profit potential of the product idea based on consumer data.

The use of the concept test in combination with SPRINTER allows a venture team to stand back from the excitement of the newly created idea and take a rational and business-oriented look at the potential of the concept in terms of sales volume and profitability. This step of the screening phase is a critical go/no go decision point prior to moving on to the next phase in the process.

A typical example of the importance of this step is the conflict that erupted over preliminary "guesstimates" of sales volume by marketing executives on one new product idea. One marketing executive felt that the new product concept was a $2 million opportunity and not worth pursuing while another of the group felt it was a $20 million opportunity. A SPRINTER forecast using the concept test data as input produced a $24 million forecast. The excitement that this forecast developed clearly made this new product the No. 1 priority at this company.

[5]Glen L. Urban, "SPRINTER MOD III: A Model For The Analysis Of New Frequently Purchased Consumer Products", Operations Research, Vol. 18 (September-October, 1970) pp. 805-854.

With the confidence that the idea has potentially favorable sales and profit impact on the corporation, the next step is to actually produce the final product and develop the advertising.

Refinement and Evaluation Phase

In this step advertising is created, tested, and refined while the final product is being tested and produced. All of this type of work is going on at varying levels of sophistication in most package goods new product development departments today. What is different about the new product development process proposed here is the way the data generated from the above studies is used as input for management science models used in this phase. The first model is PERCEPTOR which is used for refinement of product and advertising positionings.

An example of this is provided by a toiletry company launching a brand into a category where a competitor has just launched a major successful new entry. PERCEPTOR shows that it was not as advantageous to position this proposed new product along the same consumer need dimensions as the newly successful competitive brand. Rather it was more advantageous to position the proposed product along another need dimensions, which was identified as a newly salient dimension by the use of the new product positioning model.

Based on this refined positioning, advertising copy was developed to tap the newly emerging market segment. The final product positioning was considerably improved by the use of the management science model and the synergistic utilization of the findings from the advertising and product testing.

At this point in the process, final product, packaging, and advertising are available. In many firms test marketing would now be undertaken. This is a mistake. The reason test marketing should not now be undertaken is the extremely high cost of a test market. Current costs of test market run between $500,000 to $1 million plus the time and internal corporate resources devoted to the project. There is a new research and management science tool available to prevent test market failure. It is the test market laboratory simulator. The laboratory simulator predicts market share for a new product, and is used as a go/no go decision point for test market. This reduces the risk of test market failure and in some cases eliminates the need for a test.

The purchase laboratory simulator is based on taking a sample of consumers and presenting them with the advertising for the new product, along with comeptitive advertising. Then they are asked to shop in a simulated retail store, take the product home and use it. ASSESSOR is a laboratory simulator that has been used to predict the market share of a number of new products.[6] As an example, ASSESSOR predicted that the test market share of a new deodorant "SURE" by Proctor & Gamble would hit 10 percent. This forecast came within one share point of the actual test market and subsequent national experience. In another case, a household product manufacturer ran a laboratory simulator on a proposed new product. The results clearly indicated a failure. The company did not proceed to

[6]Alvin Silk and Glen L. Urban, "ASSESSOR: A Pretest Market Evaluation Model", Working Paper, Alfred P. Sloan School of Management, M.I.T., 1974

test market and saved substantial funds and learned for less than $50,000 what otherwise would have cost $500,000 for test marketing.

Test Market

In spite of all the new methodology which generates substantial amounts of new information and gives reasonably accurate forecasts of the business potential of an idea, there is still the need for test marketing because of the tremendous cost inherent in national launches of new products (10 to 20 million dollars) and the contingent risk of any new venture. Test market is a necessary activity, but its role in this new format changes.

Instead of test market being the sole determinant of share of market and commercial viability, the new product process has already generated an accurate forecast of the business potential in the earlier stages of development. The test market serves the purpose of a final validation of market share and the understanding of consumer response by tracking the consumer dynamics month by month in the test market. This pays off in a model like SPRINTER by providing the opportunity to optimize the marketing mix.

For example, a health/beauty aid manufacturer, based on data from a test market experience, identified an optimal marketing mix. Over 50 or 60 simulations of alternative marketing strategies were run in the market model. The improved and more aggressive marketing strategy outlined by the model substantially contributed to increases in share achievement and profitability. This result was achieved based on the ability to collect and process

more information which allowed an in-depth understanding of consumer dynamics and the ability to exploit that understanding in terms of developing better strategies.

The outcome of the test marketing phase is a refined financial forecast and marketing strategy for the national introduction based on test market experience that best reflects the real world. On the basis of this forecast, projections of profitability and investment requirements can be made. When these factors are balanced against the risk elements, a go/no go national launch decision can be made.[7]

Launch

The outcome of the test market analysis is the national launch objective. Because of the inevitable differences between test market and national it is essential to track these differences and make stratetic revisions in the national marketing plan. Such continuous tracking can be carried out with a market model like SPRINTER. The model allows the marketing group to react to differences from the plan much faster and the result is an optimization of the marketing expenses and profit.

For example, when a competitor of a major personal care cosmetics manufacturer launched a defensive new product in head-on retaliation to the national launch of the original new product, the use of SPRINTER indicated that a 25 percent increase in advertising combined with consumer promotions that reduced price by 10 percent would be the best response to the launch of the defensive brand. It was clear that with

[7]Formal concepts such as risk analysis are sometimes useful. See David B. Hertz, "Risk Analysis in Capital Investment", Harvard Business Review, (January-February, 1974), pp. 95-106.

the launch of the defensive brand there would be a big difference between test market results and national launch results. The use of SPRINTER aided in a rapid response that narrowed the gap.

The Process in Review

All the components of the process have been validated in use over the last five years in numerous package goods firms. Currently, the entire process as an integrated system is being validated with outstanding results in one firm over the last three years. In that firm the process has generated over 20 definitive concepts. When screened, these concepts have produced four major creative new products. One has been launched successfully and the other three have demonstrated outstanding results at various stages in the new product process. Additionally, the process has reduced the risk of test market failure. Four products could have gone into test market, but three were eliminated by the purchase laboratory simulator. The one product that did go to test market was successful.

The process has generated an on-going stream of new products, improved creative output, reduced the risk of product failure, improved forecasting and strategic decision making.

IMPLICATIONS FOR YOUR FIRM

Based on the experience in the consumer package goods firm, it is believed that this process has wide application to other industries. This section will describe the creative synergies and risk reduction phenomena that are inherent in this process and are applicable to all new venture development.

Creative synergies of the process:

- Makes Bright People Brighter

  The use of management science and traditional marketing research methods produces divergent thinking. The interaction and conflict of divergent views when reconciled creates high levels of understanding of market dynamics and results in the identification and exploitation of business opportunities.

- Channels "The Impossible To Manage" Creative Effort

  Creativity is the most scarce resource of the firm. Priorities must be set to utilize this resource efficiently. Merely assigning creative people to various projects is insufficient. The proposed process implies enthusiastic, creative work on a few projects that are identified early as having high market potential. This is critical in setting priorities for creative resource utilization. Continued tests of business validity in the process channel creative effort to assure maximum output.

Risk reduction phenomena of the process:

- Encouraging Excitement While Maintaining Disciplined Rationality

  The process forces the firm to face all the difficult issues of creativity while at the same time facing the disciplines of business viability. Often these two issues appear to be incompatible. The process makes them compatible by facing the two issues sequentially. First,

the emphasis is on creativity, then the emphasis shifts to evaluation with the results of the creative phase being rationally evaluated by disciplined and comprehensive management science models. Important forecasting and positioning issues are considered that otherwise might be lost in the surge of excitement in creative stages of idea generation. Once the evaluation is complete, the emphasis returns to creativity by moving to the product design and refinement.

- Facing the Approach/Avoidance Conflict of Forecasting

  Management science techniques allow the facing of complex market dynamics that in the end underlie all new business forecasts. This forecast is the single most critical determinant of management's go/no go decision. Rather than avoiding these complexities by "pulling forecasts out of the air" or "seat of the pants" judgements, the management science models, like SPRINTER, PERCEPTOR, and ASSESSOR, are the tools that allow these issues to be more effectively handled. Risk is minimized by basing the decision to move forward on analytically sound forecasting and not on the feeling that "we've got a winner."

- Unifying the Organization's Energies for New Product Development

  The ground rules for new product development are clearly set down by the process with the result that everyone in the company knows what is to be done next and what the key

decision points are. No energy is wasted in retracing steps that have already been completed or wasted in doing work irrelevant to the step currently being pursued in the process. Conflict resolution is focused at each decision point by the use of the management science models. Differences of opinion are encouraged and resolved. This is beneficial because it leads to new insights which ultimately improve the output without disrupting the activities leading to introduction. A consensus is forged based on data, models, and judgement. There is no need to resort to executive fiat to resolve disputs and conflict. The net results are more insightful problem solving and more efficient use of the resources.

BUILDING THIS NEW PRODUCT PROCESS IN YOUR FIRM

The first thing to remember is that successful new product development is dependent on people. Although the process structures and aids in decision making, it is the people who make it work. Effective individuals must be identified and organized into a developmental group. Although there is no monolithic approach to organizing the new product development effort, our experience indicates the venture team organizational format is the best way to make the potential of this process a reality.

If you want to implement this system in your firm you must realize:

- it takes time - - 2 to 5 years to build an integrated and functioning system.

- it is costly - - you must invest in manpower, training, technology, and management commitment.
- it requires discipline - - the process must be followed carefully. Management must resist prematurely moving forward with an exciting idea before the necessary steps have been cleared or discarding an idea before it has been adequately tested.

The type of process described in this paper is the wave of the future. In the emerging market environment, successful management will be dependent upon effective integration of management science models and traditional qualitative and quantitative marketing techniques. Firms that are able to effect this integration will be able to develop a portfolio of creative new product opportunities. These firms will be able to choose what new products to launch and when to launch them, and thereby will be able to insure achievement of planned sales and profit growth with a minimum risk of capital resources.