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C.17 New Product Development

THE ROLE OF NEW PRODUCT DEVELOPMENT IN MARKETING

The new product development process provides a planned series of steps for bringing a new product from the initial new product idea stage to readiness for test marketing. The process from test marketing through national introduction is covered in GLOSSARY entry C.18 on **new product introduction**.

The Need for New Product Development.

The term **new product** lacks an agreed-upon definition, being applied to everything from new models of current products to major innovations that start a new **product life cycle**. In most cases, a product termed “new” should be perceived by consumers as offering new or different benefits and should result in a new positioning.

The need to develop new products is stimulated by competition. As the product life cycles of current products reach maturity, sales growth rates and profit margins de-

cline. Competitors bringing innovative new products to the market cause older products to decline and be eliminated. To maintain sales and profits, businesses must develop product improvements to extend the life cycle of current products, and they must develop new products to replace those that have gone into decline and been eliminated (see GLOSSARY entry A.15 on the product life cycle). If the objective of the business is to grow, rather than to simply maintain its position, there is further motivation to develop new products. The **strategic market planning process** defines the growth objective of the business. The difference between the growth objective and the projected growth of current products is the **growth gap**. The growth gap must be filled by either acquisition of new businesses or new product development.

The strategic market plan serves new product development in two ways. First, as noted above, it defines the growth gap and specifies the part that is to be filled by new

product development. This becomes the new product development objective. Second, the strategic market plan directs the new product development effort. In defining the strategy of the business, the plan specifies the markets in which the business will compete and in which new product development should take place. The business strategy and the objectives that accompany it also specify the resources that are allocated for new product development. It is important that new product development emerge from the strategic planning process of the business (see GLOSSARY entry A.20 on the strategic market planning process).

If the business is to carry out successfully its new product development objective, it must organize for the effort. In the past a common organizational pattern for new products was to place responsibility either in R&D or the marketing department as a supplementary responsibility. Increasingly the trend is to form independent, interdisciplinary, new venture teams assigned full time to managing the new product development process. This approach brings considerably more focus to the project and offers important coordination advantages. Other requirements of a successful new product development organization are these:

- *Top Management Commitment.* Top management must be fully committed to the new product development effort and that commitment must be sustained throughout the process.
- *Organizational Separation.* The new products effort must be organizationally separated from the management of ongoing products so that it receives the continuing attention that it needs and is not interrupted by day-to-day problems of going products.
- *Market Orientation.* New product development organizations must be market sensitive. The organization must be built around the **marketing concept** principle that successful new products are ones that offer superior satisfaction of consumer needs.
- *Willing to Accept Risk.* New product development is a high risk process with a high proportion of failure. The new products organization **must be able to accept this risk, knowing that elimination of all risk can be accomplished**

only by halting the process. If the organization is to succeed, it must also be allowed to fail.¹

Objectives of the New Product Development Process. A Booz, Allen & Hamilton study among companies developing new products showed that of 58 new product ideas studied, only 1 achieved commercial success.² Other studies have also shown high failure ratios, the precise number depending on the definitions used for new product attempts and new product successes. Regardless of the study, it is clear that new product development is a high risk activity with more failures than successes.

One of the consequences of the high failure rate in new product development is the resulting cost of a new product. Urban and Hauser estimated (in 1980) the cost of a new industrial product at \$2.2 million and the cost of a new consumer product at \$6.4 million.³ But the total cost is really higher than this because of the costs associated with new product ideas that were suggested, worked on, but terminated before being commercialized. The cost of new product development escalates as the process moves from idea generation toward commercialization. Finklin estimates that initial conception of a new product idea costs very little, say \$5,000, but that establishing the feasibility of that idea costs ten times that amount. Product development, the next stage, costs 20 times as much as the feasibility study, pilot production costs 20 times as much as product development, and full commercialization costs "much more" than pilot production.⁴

Understanding the risks and the costs of new product development suggests the objectives of the new product development

¹See David W. Nysten, "New Product Failures: Not Just a Marketing Problem," *Business* (September-October 1979), pp. 2-7.

²*Management of New Products* (New York: Booz, Allen & Hamilton, 1968.)

³Glen L. Urban and John R. Hauser, *Design and Marketing of New Products* (Englewood Cliffs, N.J.: Prentice Hall, 1980), pp. 47-49.

⁴Eugene F. Finklin, "Developing and Managing New Products," *Journal of Business Strategy* (Spring 1983), pp. 39-46.

concept. This concept provides a set of steps that begins with a new product idea and takes it through commercialization. The process provides an orderly and planned approach that reduces the risk of failure. It provides for evaluation of new product ideas early in the process so that concepts not likely to succeed are eliminated before their cost escalates.

New product development as presented is a sequential process in which a group of specialists completes one step before the project is handed along to another specialist group to complete the next step. Because of the competitive pressures in most markets, there is pressure to speed up the process. The modern approach is to assign interdisciplinary task teams to the project and allow the steps in the process to overlap and iterate as team members interact.⁵

New product development may be characterized as **technology push** or **market pull**.⁶ In technology push, the stimulus for the new product comes from a technological advance, usually suggested by R&D or some other technical group. In market pull, more in keeping with the marketing concept, new product development starts with a perception of an unfulfilled consumer need. Neither of these approaches should be eliminated as a source of new products. However, an objective of the new product development process is to assure that products developed from technology push are evaluated in terms of consumer needs and that products developed through market pull are evaluated to assure that the product is technically feasible.

THE NEW PRODUCT DEVELOPMENT PROCESS

The new product development process accomplishes three things. It provides for the

generation of new product ideas on a planned rather than haphazard basis. Second, those ideas are subjected to a series of increasingly demanding evaluation screens from which the probability and the requirements for success are learned. Finally, the process provides, as its output, a finished new product and a marketing plan for its introduction.

The new product development process is presented below in seven steps and is summarized in Figure C.17-1. A different subdivision and sequence may be called for to meet the situation of a particular business. As noted earlier, a different sequence and an overlapping of steps may also be appropriate when it is desirable to speed up the process.

Step 1: Idea Generation. If the generation of new product ideas is to be a planned rather than haphazard process, it must begin with a definition of markets that represent opportunities for new product development. Markets of interest may have been established by the strategic market plan based on an analysis of the opportunity and fit of potential markets. If not, such an analysis

FIGURE C.17-1

The New Product Development Process

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1. Idea Generation
 - Definition of opportunity markets
 - External (consumer) sources
 - Internal sources
 2. Idea Screening
 - Technology screen
 - Marketability screen
 3. Concept Testing
 - Focus group testing
 - Quantitative testing
 4. Business Analysis
 - Situation analysis
 - Development recommendation
 5. Product Development and Testing
 - Product design
 - Laboratory testing
 - Use testing
 6. Marketing Strategy Development
 - Final positioning
 - Marketing mix
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⁵See Hirotaka Takeuchi and Ikujiro Nonaka, "The New, New Product Development Game," *Harvard Business Review* (January-February 1986), pp. 137-46.

⁶See Finklin, "Developing and Managing New Products,"

should be undertaken. GLOSSARY entry A.20 outlines the process for conducting a market opportunity analysis. Market definition prior to idea generation assures the fit of new products to the strategic direction of the business and provides focus to the process of generating new product ideas.

The search for new product ideas should be a broad one, tapping both external and internal sources. In keeping with the **marketing concept**, it is essential that new product development be based on a good understanding of consumer needs. In many instances, consumers are not a good direct source of finished new product ideas, but market research techniques are available to assure that consumer needs are represented in the idea generation process. Consumers are adept at evaluating new product alternatives. By testing preferences for product alternatives with varying attributes, researchers, using mapping techniques, are able to determine the importance of various product characteristics to consumers. Product spaces can be mapped showing the product attributes desired and the extent to which current products meet these needs. Gaps in the map of the product space suggest new product possibilities (see GLOSSARY entry C.25). Focus groups and depth interviews are also widely used to probe consumer needs and attitudes toward existing products in a class as well as to evaluate new product alternatives. In industrial markets, customers have proven more likely to be direct sources of new product ideas. Von Hippel suggests identifying likely innovators and offering them an incentive to bring new product ideas forward.⁷

Internally, the search for new product ideas can take many forms. New product ideas can be solicited from individuals or groups within the firm. Group idea generation sessions, using such techniques as brainstorming or synectics, can be staged among internal personnel who have been briefed

by the analysis of the chosen development market and the consumer needs research. Marketing, R&D, and advertising agency personnel are likely participants. Available or anticipated technology should be explored to determine its applicability to the market of interest. Competitive products should be explored to see if they suggest variations. Levitt suggests that a business balance its search for truly innovative new products with evaluation of product ideas that imitate and improve on the product of the innovator.⁸

Step 2: Idea Screening. In order to foster creativity, the idea generation process should encourage quantity and diversity, saving evaluation until the next step. Because of this, many ideas are usually generated. The purpose of the screening step is to determine which ideas warrant further development. Ideas with little potential must be eliminated to allow resources to be focused on those with a greater chance of success. At the same time, care must be taken not to eliminate potentially successful ideas before they have been adequately explored.

Idea screening compares new product ideas to a checklist of criteria believed important to new product success. Two types of screens should be employed, although there may be several increasingly demanding waves of each. One screen should evaluate the technical feasibility of the product to determine if technology is available to make the product, if it can be produced in quantity, and if it can be produced at a marketable price. The technical feasibility screen should include examination of the fit of the product to the firm's technical and operational capability.

The marketability screens examine whether or not the product meets consumer needs, offers adequate sales potential, and fits with the marketing capability of the firm. Several researchers have suggested criteria

⁷Eric von Hippel, "Get New Products from Customers," *Harvard Business Review* (March-April 1982), pp. 117-22.

⁸Theodore Levitt, "Innovative Imitation," *Harvard Business Review* (September-October 1966), pp. 63-70.

for screening new product marketability.⁹ Studies of the reasons for new product failure are also useful in suggesting screening criteria.¹⁰ In most cases, the business should formulate its own criteria, using such sources as suggestions. At a minimum, the criteria should include these considerations:

1. Does the product meet consumer needs?
2. Does the product offer competitive advantage?
3. Is the market potential adequate? Stable?
4. Does the product support the market strategy of the business?
5. Are the marketing needs of the product consistent with the marketing capabilities of the firm?

Step 3: Concept Testing. Concept testing is another form of idea screening designed to get consumer evaluation of the product idea before the heavy resource commitment of product development. Consumers are best able to provide evaluation of the product if the idea is placed in a form that will allow the consumer to envision the finished product. For preliminary rounds of concept testing, consumers are sometimes shown brief statements describing alternative concepts. A better approach is to present the product concepts through prototype advertisements that might be used in introducing the product. In addition, models of the product or package are sometimes used.

Initial concept testing usually takes place in focus group sessions (see GLOSSARY entry A.11). After some initial discussion of the product category, the statements, ads, or models are shown to participants and their reactions are solicited. Participants are probed for their likes and dislikes, suggested

improvements, comparisons with competitive products, and their likelihood of purchase. After refinements based on focus group results, promising concepts may be exposed to larger samples using more quantifiable techniques to gain a preliminary estimate of the intention to purchase. This information is used to support a projection of sales potential. Active new products companies use the results of standardized concept-testing techniques to form benchmark scores that help to predict the success of new product concepts.

Step 4: Business Analysis. The fourth step utilizes the preliminary data already collected and supplements it with additional data on the product and the market to form a recommendation for product development. The business analysis takes the form of a **situation analysis** and will form the initial section of the marketing plan if the product continues its development (see GLOSSARY entry A.17 on the situation analysis).

The business analysis should examine market potential and develop a sales estimate (see GLOSSARY entry A.16 on sales forecasting for new products). Competitive products and competitive marketing strategies should be determined. Consumer needs and shopping behavior for the product class should be analyzed, and all information on the proposed product should be analyzed to determine its feasibility. Based on test results, a refined product concept should be described, including the benefits and competitive advantage to be offered to consumers.

The outcome of the business analysis is a recommendation whether or not to proceed into development of the product. This decision is highly important because costs escalate dramatically once the decision is made to commit to product development.

Step 5: Product Development and Testing. The new product, which up to this time may not be more than the concept statement or advertisement used in the concept test, must be developed into a physical product. Product development is guided by the re-

⁹For examples, see John T. O'Meara, "Selecting Profitable Products," *Harvard Business Review* (January-February 1961), pp. 83-89, and Ronald H. Hamilton, "Screening Business Development Opportunities," *Business Horizons* (August 1974), pp. 13-24.

¹⁰As examples, see Roger Calantone and Robert G. Cooper, "New Product Scenarios: Prospects for Success," *Journal of Marketing* (Spring 1981), pp. 48-60, and R. G. Cooper, "The Dimensions of Industrial New Product Success and Failure," *Journal of Marketing* 43 (Summer 1979), pp. 93-103.

efined product concept in the business analysis. The task of product development is to design a product that provides the benefits and the competitive advantage specified by the product concept. There are several stages in the product development process, their nature depending upon the product type. Included will be setting preliminary product specifications or formulations, preparing test products, setting final specifications, engineering the product for production, and producing pilot lots.

The product development process is interspersed with testing, each development stage being subjected to a test before the next stage is attempted. Early testing is in the laboratory to determine technical feasibility. When product engineering is completed, testing must take place at the manufacturing site to determine that the product can be produced. Product safety testing must be completed before the product is released for consumer testing.

Consumer testing takes place as soon as test product is available. Initial testing may be in laboratories or in central locations. Alternative recipes, flavors, colors, or other design elements can be exposed to consumers to get preference results that will be helpful as product development proceeds. When finished product becomes available, more rigorous testing under natural-use conditions should be used. For consumer products this means testing in the home (termed **home-use testing**); for industrial products trial product placement is required. Frequently the product is introduced to the test participant using some form of concept description such as was used in the concept tests. From these use tests, the marketer seeks consumer evaluation of the product, determination of whether or not the intended benefits are perceived, and a further estimate of the likelihood of purchase.

Step 6: Marketing Strategy Development. Although it is listed later in the sequence, marketing strategy development usually takes place in parallel with product development. Marketing strategy development includes developing and testing the final product po-

sitioning and the elements of the marketing mix. The marketing strategy develops from the business analysis of step 4 and incorporates results of the product testing.

Individual elements of the marketing mix are pretested where possible. Advertising copy and executions are developed and tested as are product names and package designs. Pricing alternatives can sometimes be evaluated as part of product tests by asking participants about their price expectations and getting reactions to pricing alternatives.

The outcome of this step is a completed national marketing plan that combines the business analysis with a situation analysis, the positioning, and the marketing mix. The projected outcome, should the marketing plan be implemented, is included, usually in the form of projected profit and loss statements and some form of profitability analysis.

Step 7: New Product Introduction. The stage that follows new product development is new product introduction. This includes the steps of pretest market evaluation, test marketing, and national launch. **New product introduction** is considered in GLOSSARY entry C.18.

SUGGESTIONS FOR FURTHER READING

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