



Product Development Institute Inc.®



## Product Innovation Best Practices Series

# How New Product Strategies Impact on Performance

**Reference Paper #5**

Robert G. Cooper

### Compliments of:

Stage-Gate International and  
Product Development Institute Inc.

**For information call +1-905-304-8797**

This article appeared in *J. Product Innovation Management*  
1984, Volume 1, No. 1, pp 5-18

[www.stage-gate.com](http://www.stage-gate.com)





## How New Product Strategies Impact on Performance

Robert G. Cooper

*What is involved in a successful new product program? Is it high spending on risky R&D? Is it close contact with customers? Is it the overall competitive strength of the firm? Well, it might be any of these things, and more, according to Robert G. Cooper, depending on your definition of success. In an exhaustive examination of the new product strategies and performances of 122 industrial products firms, Cooper found that the strategy that a firm elects for its new product program is closely linked to the performance results that firm achieves. But what's performance? Cooper's analysis uncovered three different and independent ways of viewing new product performance. He brings some clarity to the meaning of a "high-performance" product innovation program, but there's a catch—the strategies leading to high performance in one direction are quite different from the strategies leading to positive results by other measures. In his summing up, Professor Cooper proposes sets of generalized strategies—guides to action—that product innovation managers should consider.*

Over the past decade we have witnessed a growing emphasis on the role of new products within the modern corporation. Progressive managers are increasingly recognizing that a new product or technology strategy should be an explicit and central element of corporate strategy [6, 10, 11, 13]. This is especially true for technologically intensive industries, such as industrial goods manufacturers in electronics, electrical, chemical, and equipment product areas. New products can no longer be treated simply as a given, nor technology as a corporate resource to be utilized whenever convenient.

New product development and technology bear an integral relationship to a company's strategic thinking by helping to define the range of its choices [10]. Managers therefore face critical questions in deciding on the nature and direction of their firms' new product programs. Typical questions include:

What should be the role of new products in our company? What performance results or contribution to corporate objectives should we expect from our new product program?

How do we measure or express new product performance?

In what areas should we focus our new product efforts—what types of markets, products, or technologies? Is a focused approach right at all, or is it too constraining?

Should we stay "close to home" with our new products, or should we venture into unfamiliar markets, products, or technologies to our firm?

Should we have a market driven or technology driven new product program? Should we be technologically aggressive or adopt a "wait and see" approach?

Address reprint requests to Robert G. Cooper, Faculty of Business, McMaster University, 1280 Main Street West, Hamilton, Ontario, L8S 4M4, Canada.

**BIOGRAPHICAL SKETCH**

Robert G. Cooper is Professor of Marketing at the Faculty of Business, McMaster University, Hamilton, Ontario, Canada, and also Director of Research of the federal government's Canadian Industrial Innovation Centre, Waterloo, Ontario. He holds bachelor's and master's degrees in Chemical Engineering, and an M.B.A. and a Ph.D. in Business Administration. Dr. Cooper is a noted researcher, consultant, and lecturer in the field of industrial product innovation, and has published over two dozen articles and books on the topic. Many readers will be familiar with his widely acclaimed research study published in his book, *Project Newprod: What Makes a New Product a Winner?*, Montreal: Quebec Industrial Innovation Centre, 1980.

We set out to gather evidence to help answer these and other questions by observing the new product strategies of a large number of firms and noting their performance results. The common thread running through these management questions became the focus of the investigation, namely,

What strategies do firms choose for their new product programs?

What performance results do they achieve?

Our results show that the new product strategy elected is closely linked to performance. Overall, 19 major dimensions were identified, which portrayed the strategies of firms' new product programs. Thirteen of these strategy dimensions were found to be tied to (or predict) the performance of the program. Moreover, we uncovered a total of three—not one—independent ways of viewing new product performance, and found that the strategies leading to high performance on one gauge were quite different from the strategies resulting in positive performance on another measure. Strategies featuring technological sophistication and innovativeness, marketing synergy, and a market need orientation were generally found to yield positive, although different, results.

These findings will be described in more detail later in the article. But first, here is some background on the nature of the problem, the rationale for the investigation, and how the study was undertaken.

### A Myopic Focus?

In spite of the importance of new products, management can find little help from the traditional literature in the formulation of a new product strategy [11]. Few guidelines and concepts have been developed to assist

the manager in the choice of arenas and direction for the new product program [7]. Moreover, little empirical research has been undertaken to determine the components and results of firms' overall new product strategies, that is, how companies directly or indirectly choose new markets and areas of technology, and organize and focus their R&D efforts in different ways [12].

One of the problems is that most strategic planning concepts deal with existing products and businesses. Concepts such as the strategic business unit (SBU), resource allocation, and portfolio analysis are familiar planning tools. A systematic procedure for generating and choosing strategic options [7], including new products and new businesses, is lacking in these planning processes.

A second problem is that the concepts and research that deal with product innovation have too narrow a focus: they center on the individual new product as the unit of analysis, but fail to consider the firm's total new product program. For example, elaborate frameworks and methods have been developed to aid the manager in the generation, screening, development, and launch of a new product [5]. Similarly, empirical research has probed the reasons for new product success, the causes of failure, and what separates successes from failures, but only for individual products. Such studies have pointed to the need for a greater market orientation, more market research, better project evaluation techniques, and more attention to the market launch phase [2-4, 9, 14, 15].

This focus on individual products rather than the totality of the firm's new product program has been criticized as myopic [1, 8]. A logical outcome of prescriptions from such studies is a market-driven, conservative new product program, one that emphasizes incremental innovations and product modifications. Such a program may feature a high rate of new product successes, but when viewed in total and over time, the net impact of the program on the company's fortunes may be only marginal—a "win the battle, but lose the war" outcome. For long run and dramatic success, major breakthroughs and significant innovations may be required [15]. Conceivably, what leads to success for individual new products may not result in a totally successful new product program.

A need exists to probe the relationships between new product performance and new product strategies. Our investigation tackles the problem, first by drawing on the experiences of a large number of firms, and second by exploring the strategies and performance of the firm's entire new product program.

## New Product Strategies

What is involved in a successful new product program? In order to answer this question, 122 industrial product firms provided information on their new product strategies and results.

In each company, we measured 66 individual strategy elements, using zero to ten scales for most. These 66 elements fall into one of the following four blocks:

**Nature of products developed.** We asked managers about the types of new products they developed, the level of innovativeness, the type of differential advantage sought, whether they fit into the current product line, etc.

**Nature of markets sought.** We requested managers to describe the types of markets their firms targeted with their new products: market size and potential, market growth, the competitive situation, stage of product life cycle, market newness to and synergy with the firm, etc.

**Nature of technology employed.** We asked managers about the types of production and development technologies used in their new products: concentrated versus diversified, technological maturity, synergy or fit with the firm's current technology base, etc.

**Orientation and nature of the new product process.** Managers indicated the direction, nature, and commitment to the process of developing new products: offensive versus defensive, proactive versus reactive, market versus technologically driven, pure versus applied research, levels of spending, etc.

Many of the 66 strategy elements we measured were closely connected. We therefore reduced these 66 elements to 19 underlying and independent dimensions that captured most of the strategic directions of the firms. These 19 dimensions or factors can be thought of as themes or "packages of strategies." The resulting strategy dimensions were then tested to see which ones were closely tied to a successful new product program. Details on how the research was conducted, the composition of firms, and the statistical methods used are described in Exhibit 1.

## What Is a "Successful" Program?

Measures of new product program performance included a number of commonly used gauges, namely:

the percentage of current company sales made up by new products introduced over the last five years;

the success, failure, and "kill" rates (percent) of products developed in the last five years (2 variables);<sup>1</sup>

the extent to which the new product program met its performance objectives over the last five years;<sup>2</sup>

the importance of the program in generating sales and profits for the company;

the extent to which profits derived from new products exceed the costs of the new product program;

the success of the program relative to competitors;

the overall success of the program—a global rating.

These performance measures, it was found, capture different facets of a firm's new product performance. Initially, the intent was to combine all eight measures of performance to yield a single index of performance. However, some firms were found to fare well on some measures and poorly on others. While certain gauges of performance were correlated with each other, there was, by no means, total consistency.

The result of our analysis was three, not one, dimensions of performance.<sup>3</sup> These three independent dimensions include:

the impact, which describes the impact or importance of the program on company sales and profits;

the success rate of the program, which gauges the "track record" of the products the firm develops, i.e., success rates and kill rates;

the relative performance, which captures the overall performance of the program relative to objectives, to competitors, and in terms of profits versus costs.

These three performance factors, and how individual performance measures load on them, are shown pictorially in Figures 1(a) and 1(b). The eight individual performance measures are shown as vectors; for example, in Figure 1(a), the measure "percentage sales by new products" loads heavily on the impact dimension

<sup>1</sup>Since success rate, kill rate, and failure rate add to 100%, two variables explain the third, i.e., only two variables are measured.

<sup>2</sup>These last five measures were obtained with anchored zero-to-ten scales.

<sup>3</sup>Based on factor analysis, varimax rotation, eigenvalues  $\geq 1.0$ , validated using random cross split halves. Performance factors were constructed to be independent of each other. Factor loadings are shown in Figures 1(a) and 1(b).

### Exhibit 1. The Research: Method and Analysis

A population of industrial firms known to be active in new product development was identified and narrowed to a convenient geographic area (Ontario and Quebec, Canada). Firms were randomly sampled, and managers responsible for their firms' new product efforts from a commercial perspective were contacted by telephone. Details of the study were explained, and an agreement to cooperate solicited. A pretested mailed questionnaire was the measurement instrument.

Managers were asked to describe their firms' new product strategies: a total of 66 strategy variables. For most of these, managers were presented strategy statements and asked to indicate whether each described their firm (agree/disagree: 0 to 10 scales). For example, the variable "product fit" was measured as follows:

Our new products fit into one of our firm's existing product lines—we have had experience with these types of products before.	<i>Never</i>	<i>Always</i>
	0 1 2 3 4 5 6 7 8 9 10	

Other variables, for example, R&D spending, were measured directly. Information was also sought on the performance of the program: eight separate measures including scaled questions and direct measures.

The question of reliability of measures was dealt with in two ways. First, the questionnaire was pretested on a limited subset of respondents, who were subsequently contacted. The ensuing discussion focused on a review of the questionnaire, question-by-question—in order to heighten the reliability and validity of questions. Second, the internal consistency of variables was confirmed from the results of correlation analysis and factor analysis where variables were found to be related to each other and to load on the same factors in the expected manner.

A total of 170 firms were originally contacted, and 122 usable questionnaires were returned, for a response rate of 72%. Missing data were obtained by telephone call-backs. The eventual sample by industry was:

Electrical & electronic	26.2%	32 Firms
Heavy equipment	24.0%	30 Firms
Chemicals	19.7%	24 Firms
Materials & components	20.5%	25 Firms
Other	9.0%	11 Firms
Total	100 %	122 Firms

The 66 measures of strategy were first reduced using factor analysis: varimax rotation, SPSS routine. The appropriate number of factors was decided on the basis of the scree test, Horne's test, Bartlett's test, and the criterion of parsimony and explanation. A total of 74.7% of the variance was explained by the 19 factors identified.

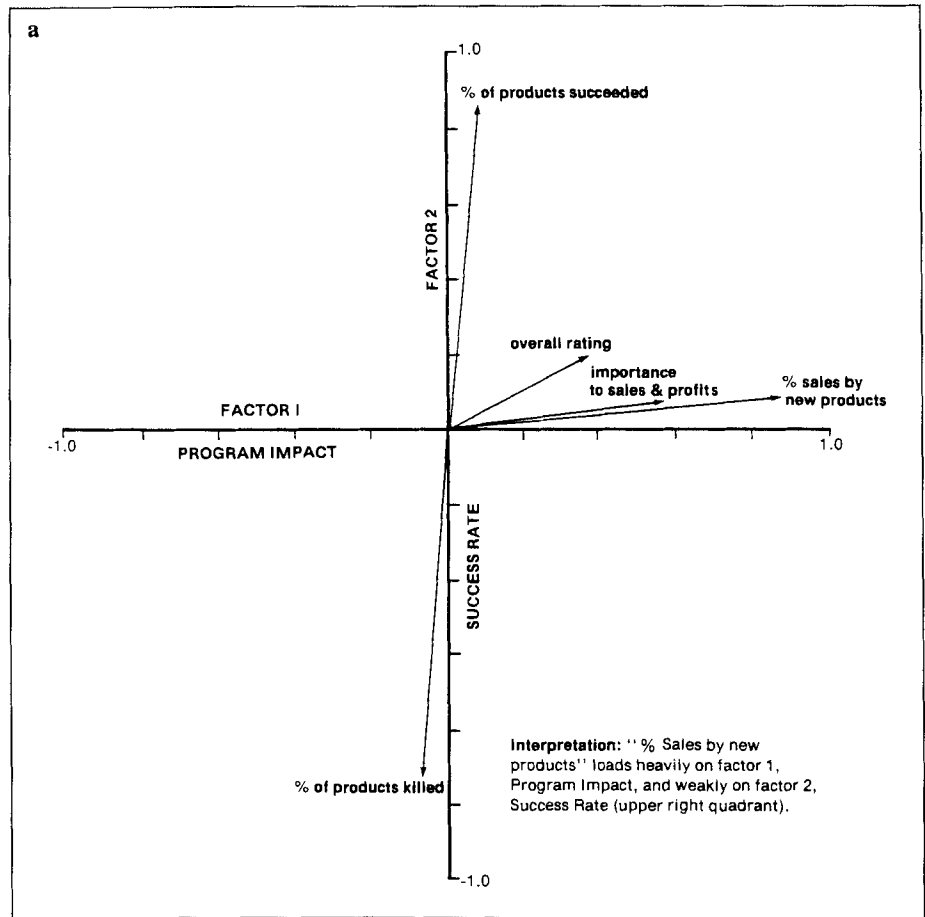
The eight performance measures were initially checked for internal consistency: the test was negative, Cronbach alpha = -0.31. Next, factor analysis was undertaken, and identified three strong, easily identifiable performance factors. The factor analysis was validated using a cross split half method. See Figures 1(a) and 1(b) for factor loadings.

Next, each performance factor was related to the 19 strategy dimensions (factor scores were computed) using both multiple regression analysis (stepwise, SPSS) and canonical correlations (SPSS). Both methods gave the same results, but only the regression results are presented here. For all three performance measures, the relationships were strongly significant (F test;  $\alpha \leq 0.01$ ); predictor variables significant at the 0.10 level are shown in Exhibits 3, 4, and 6. Correlations of individual strategy variables with performance are shown in Exhibits 2, 5, and 7.

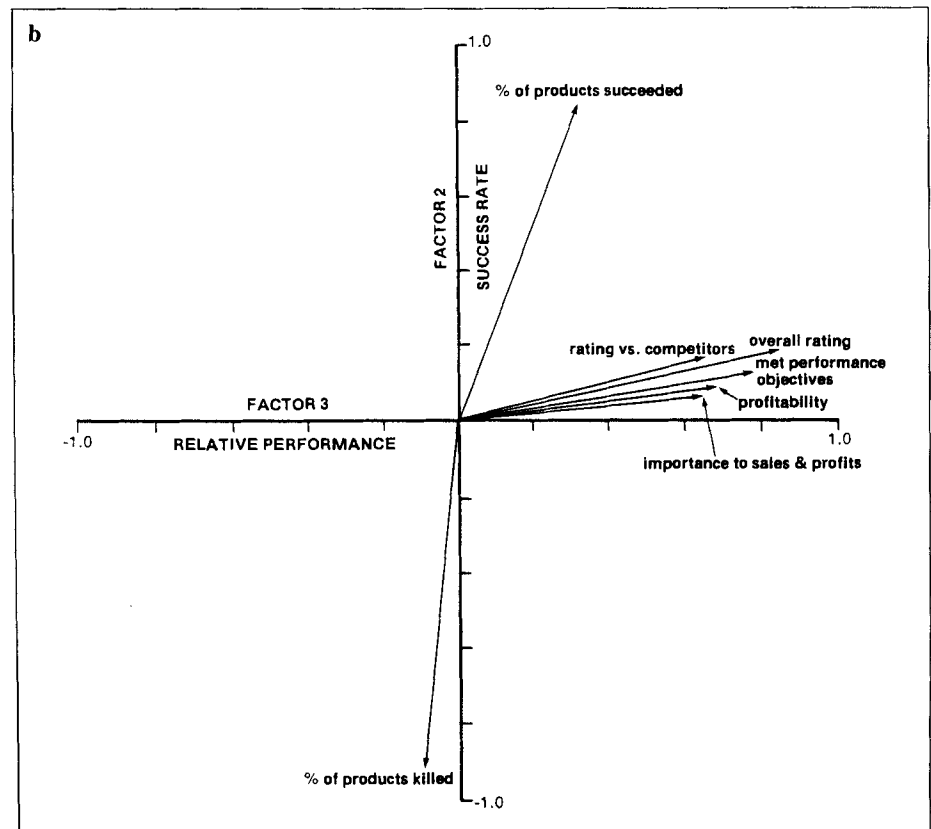
(0.87) and hardly at all on the success rate dimension (0.09), as shown by its near-horizontal vector.

The existence of these three independent performance dimensions does much to clarify the notion of "performance" in a new product context. First, performance can be viewed by managers in at least three different ways. To speak of a "high-performance program" is simplistic. The question becomes: "what type of performance—high success rate, high impact,

or high relative performance?" Second, the three criteria of performance were found to be independent of each other: success on one criterion does not necessarily mean success on the other two. For example, a number of our firms boasted an excellent "track record": the products they developed had a high rate of commercial success and a low kill rate. But many of these same firms had new product programs that failed to impact significantly on corporate sales or profits, or



**Figure 1.** (a) Two performance dimensions. Program impact (horizontal) and success rate (vertical) with loadings of individual performance gauges shown (vectors). Weakly loaded measures are omitted. (b) Two performance dimensions. Relative performance (horizontal) and success rate (vertical) with loadings of individual performance gauges shown (vectors). Weakly loaded measures are omitted.



simply failed to achieve a high relative performance. Third, the strategies that lead to high performance on one of the three criteria may be different than those that result in success on the other two: trade offs between different types of performances and their associated strategies become inevitable.

We now explore the nature of these strategy–performance relationships, specifically, the relationships between each performance dimension, namely, impact, success rate, and relative performance, and the 19 factors that portray firms' new product strategies. Note that each of these 19 strategy factors or dimensions below is multidimensional, i.e., composite dimensions, each comprised of a number of specific strategy elements.

### The High-Impact Program Strategy

Firms that boast a high-impact, new product program feature a high percentage of sales by new products, and rate the program's contribution to company sales and profits high [Figure 1(a)]. The average firm had 36.5% of its current sales made up by new products introduced over the last five years, but the top 20% of firms achieved a remarkable 65% of corporate sales by new products, and rated the program's impact on corporate sales and profits as 9 out of 10 (versus a mean rating of 6.5 out of 10).

The most important key to a high-impact program lies in the technology strategy. The factor, technological sophistication, innovativeness, and aggressiveness, was significantly correlated with program impact (correlation of 0.343).

Operationally, what does having a technologically sophisticated and aggressive program imply? As a strategy, it means developing high-technology, innovative, technically complex, venturesome, high-risk products that employ sophisticated, state-of-the-art technologies. The firm seeks products that offer unique features for customers; the firm is strongly R&D oriented and is proactive in acquiring new development technologies and seeking new product ideas; the firm sees its program as offensive (versus defensive) and as a leading edge of corporate strategy.

Exhibit 2 shows the elements and their roles in a technologically sophisticated, aggressive strategy. The cross hatched bars show the effect that each strategy element has on a high-impact program (correlation coefficient) and the white bars show the profile of the average firm on a zero to ten scale. Note the strong effect of several of the strategy elements—R&D orien-

tation, high-risk projects, sophisticated development technologies, high-technology products, and so on. Of particular interest is that the typical firm scores just above the midpoint on almost all of these strategy elements that comprise a technologically sophisticated, aggressive approach, suggesting that there is room for maneuvering for many firms on this dimension.

Other strategies also lead to a high-impact, new product program. Indeed, a total of six strategy factors were significantly related to program impact. Their relative effects are shown in Exhibit 3.

Concentration of effort is the second key to program impact. Companies with a high degree of program focus and that concentrate their new product efforts have higher impact programs than do firms with more diversified programs. The ingredients that comprise the factor, a focused program, include:

- employing related production methods for the firm's new products;
- utilizing related development technologies for new products;
- introducing new products aimed at related markets;
- developing new products closely related to each other.

Not surprisingly, a higher level of spending leads to a high-impact program (See Exhibit 3). Two strategy factors capture the spending commitment to new products, and both help to determine program impact:

- R&D spending consisting of R&D spending as a percent of corporate sales;<sup>4</sup>
- Market research spending, consisting of new product market research spending (as a percent of corporate sales and percent of project costs), and the source of product ideas (not technically derived).

Developing products with a differential advantage—products that offer unique features to customers, strongly affect customer-use behavior, and let customers reduce their costs—also results in high-impact programs. This differential advantage dimension is common to both high-impact and high success rate programs.

The final strategy factor leading to high-impact programs has an unexpected negative influence—marketing synergy. Firms that feature marketing synergy in their new product programs witness a strong fit be-

<sup>4</sup>The factor R&D spending was the only strategy factor that consisted of only one strongly loaded strategy element, i.e., a univariate factor.

**Exhibit 2. Technological Sophistication, Innovativeness, and Aggressiveness: Profile of the Typical Firm and Effects of Individual Elements on Program Impact<sup>a</sup>**

Products employ sophisticated development technology	0.30 6.3	IMPACT PROFILE
High technology products	0.27 6.6	IMPACT PROFILE
Innovative products	0.30 5.2	IMPACT PROFILE
Products are technically complex	0.26 6.4	IMPACT PROFILE
Employ state-of-art development technologies	N.S. 7.3	IMPACT PROFILE
Employ state-of-art production technologies	N.S. 6.2	IMPACT PROFILE
Products offer unique features to customers	0.18 6.8	IMPACT PROFILE
High risk projects	0.38 4.7	IMPACT PROFILE
Venturesome projects	0.18 4.8	IMPACT PROFILE
Firm is strongly R&D oriented	0.38 6.4	IMPACT PROFILE
Firm is proactive in acquiring new development technologies	0.22 6.0	IMPACT PROFILE
Firm is proactive in generating new product ideas	N.S. 6.1	IMPACT PROFILE
Program is offensive (vs defensive)	0.19 6.2	IMPACT PROFILE
Program is a leading edge of corporate strategy	0.29 5.7	IMPACT PROFILE

<sup>a</sup>Cross hatched bars indicate the correlation (-1.0 to 1.0) between each strategy element and program impact. N.S. means not significant. White bars give the profile of the typical firm (0 to 10 scale, where 10 is high).

tween the firm's new product markets and its marketing resources base: new products typically move through the firm's existing sales force and channel system, and utilize the firm's existing advertising, promotion, and market research skills. Such a strategy, however, results in a lower impact, new product program. This surprising result suggests that the types of new products that are associated with high-impact programs likely take the firm into markets where marketing synergism is less possible. Conversely, if the firm restricts itself only to markets where it can exploit its existing marketing resources, the result is a lower impact program.

The message to managers is evident. If a high-im-

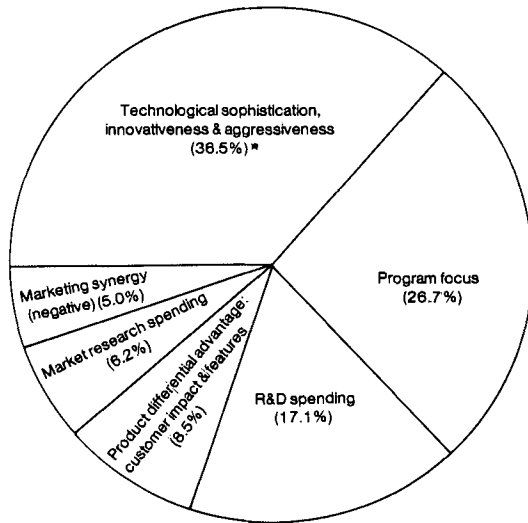
pact, new product program is desired—one that strongly affects your corporation's sales and profits—then, in general, a forceful and aggressive strategy is required. The emphasis should be on technological prowess coupled with heavy spending and a focused approach, specifically:

Utilize sophisticated and state-of-the-art development technologies, have a heavy R&D orientation, and focus on developing high-technology, innovative, technologically complex, high-risk new products.

Concentrate your new product efforts. Focus on one

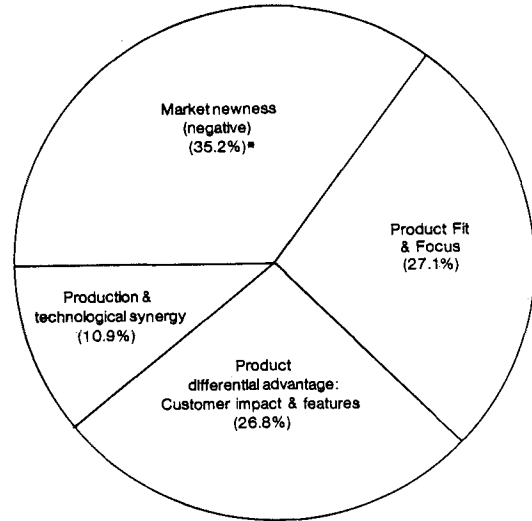


**Exhibit 3. The Strategy Dimensions Influencing Program Impact and the Effects of Each Dimension**



\*Percents denote the contribution of each strategy dimension to program impact (% of explained variance).

**Exhibit 4. The Strategy Dimensions Influencing Success Rate and the Effects of Each**



\*Percents denote the contribution of each strategy dimension to success rate (% of explained variance).

or on several markets, technologies, production methods, and product types.

Be prepared to spend heavily on both R&D and market research.

Seek to develop products with a differential advantage: products that offer unique features to customers, strongly affect customer-use behavior, and let customers reduce their costs.

Do not restrict yourself only to new product markets where marketing synergy (with your current marketing resources) is possible.

These conclusions, and indeed, all the findings of this study, are generalizations; certainly there were exceptions to these rules in our sample of firms. But these generalizations do provide a useful starting point for strategy development.

### A High Success Rate Strategy

Firms that boast a high success rate, new product program feature a high proportion of successful new product introductions, and a low kill rate of developed products [Figure 1(a)]. On the average, firms had a

67% success rate and a 16% kill rate for products that were fully developed. That is, for every 100 products that were fully developed, on the average, two-thirds were commercial and financial successes, one-sixth were cancelled prior to launch, and one-sixth were commercial and financial failures after launch. But the top performers—the best 20% of firms—achieved an outstanding 90% success rate.

The strategies leading to a high success rate of new products developed stand in marked contrast to those for a high-impact program. A much more conservative strategy is called for here. Further, success rates are more poorly explained by the strategy dimensions than the other two performance criteria. One might speculate that the success rate of products depends more on the characteristics of each individual project and its execution—that tactical issues are key—and less on the total strategy of a firm's new product program. Nonetheless, the total relationship between success rate and strategies is significant, and four strategy dimensions are tied to success rates (see Exhibit 4).

The first key to a high success rate is avoidance of new markets to the firm. The factor, market newness, is strongly and negatively related to success rate: firms

**Exhibit 5. Market Newness: Profile of the Typical Firm and Effects of Individual Strategy Elements on Success Rate<sup>a</sup>**

New product markets involve new advertising/promotion methods for the firm	-0.16 IMPACT 2.8 PROFILE
Markets involve new channels/sales force for the firm	-0.26 IMPACT 2.6 PROFILE
Markets involve new customers for the firm	-0.19 IMPACT 4.1 PROFILE
Markets involve new competitors for the firm	-0.27 IMPACT 3.4 PROFILE

<sup>a</sup>Cross hatched bars indicate the correlation (-1.0 to 1.0) between each strategy element and success rate. N.S. means not significant. White bars give the profile of the typical firm (0 to 10 scale, where 10 is high).

that seek new product markets involving new channels and sales force, new advertising and promotion methods, new competitors and new customers, have lower rates of success with their new products. The effect that each of these strategy elements has on success rate, and the profile of the typical firm are shown in Exhibit 5. Not surprisingly, most firms tend to avoid new markets, as noted by the low scores on the market newness elements.

A second conservative strategy, developing new products with a high product fit and focus, also improves success rates. Firms that concentrate their new product efforts on one type of product and ensure that these products are closely related to the firm's existing products (same end use, fit into an existing line, same product class) have a higher success rate.

A product strategy that emphasizes fit and focus logically results in product extensions and modifications, and many successful "new" products. But the total effect may not be positive: this strategy leads to a somewhat lower performance on the other two criteria, namely, program impact and relative performance.

Seeking a differential advantage is another key to a high success rate. Firms that develop new products, which offer unique features to customers, strongly affect customer-use behavior, and let customers reduce their costs, have higher success rates. This strategy also leads to positive results on the other performance criteria, and in particular, is positively tied to the impact of the program on the firm.

The final strategy for high success rate is to seek new products where production and technological synergy

is strong. Operationally this means that new products employ development and production technologies that are familiar to the firm, fit the firm's R&D, engineering, and production skills and facilities, and use related production methods. Note that this strategy also leads to a higher relative performance.

The message to product strategists is clear: if the objective is a high success rate for new products—a steady stream of successful product launches with few failures or "kills"—then a conservative strategy is the answer. Technological prowess and aggressiveness does not result in higher success rates. Rather, "staying close to home" in terms of products, markets, and technologies coupled with seeking a product differential advantage is the appropriate strategy, specifically:

Avoid new markets for the firm. Stay "close to home" in terms of new product markets.

Stay "close to home" and focused in your new products, concentrating on one or a few product areas, ensuring that your new products fit into an existing product line in your firm, and are closely related to your existing products.

Seek new products that employ your firm's in-house production, R&D and engineering skills, resources and facilities.

Develop new products with a differential advantage over competitors' products, notably products that offer unique features, affect customer use behavior, and reduce customer costs.

There is a danger in adopting such a conservative strat-

egy, however. Note that several of these high success rate strategies do not enhance performance on the other performance criteria, and in some cases are detrimental.

## Strategies to Achieve High Relative Performance

Firms that achieve a high relative performance in their new product programs demonstrate positive results in a more global sense [Figure 1(b)]:

- overall the program is rated a success;
- the program is profitable—profits exceed costs;
- the program is considered a success relative to competitors;
- the program meets its objectives;
- the program is considered important to the company in generating sales and profits.

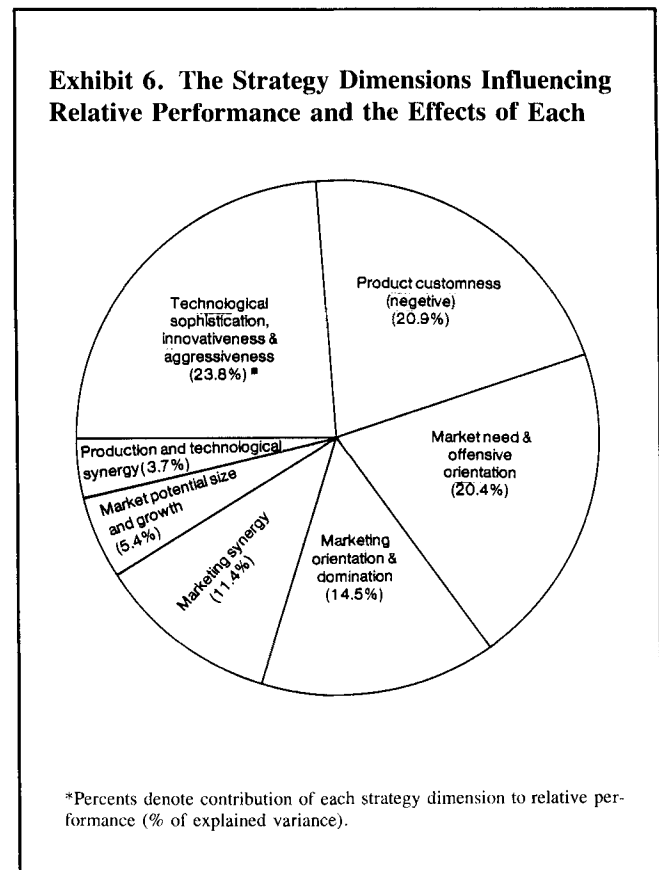
Of the three performance criteria, relative performance was best explained by the strategy dimensions. A total of seven strategy dimensions lead to high relative performance. Their respective effects are shown in Exhibit 6.

Technological and market dimensions strongly shape relative performance. The most critical strategy dimension is technological sophistication, innovativeness, and aggressiveness. Firms with a high relative performance are strongly R&D oriented and are proactive in acquiring new development technologies; they develop high-technology, high-risk, innovative products that employ sophisticated and state-of-the-art development technologies. These ingredients and how each is tied to relative performance are shown in Exhibit 7. A technological prowess and orientation is critical to both relative performance and program impact (correlations of 0.322 and 0.347, respectively) even though such technologically aggressive firms actually have a somewhat lower success rate of products developed.

The second strategy dimension tied to relative performance is product customness, but in a negative way. Firms that develop custom products, which are aimed at one or a few customers, have an inferior relative performance. Clearly, for relative performance, products should be designed for many customers and targeted at mass markets. Note, however, that product customness has no effect at all on success rates or impact on the firm.

The next four strategy factors that determine relative

**Exhibit 6. The Strategy Dimensions Influencing Relative Performance and the Effects of Each**



performance are market or marketing dimensions. Two describe the orientation of the program, they are:

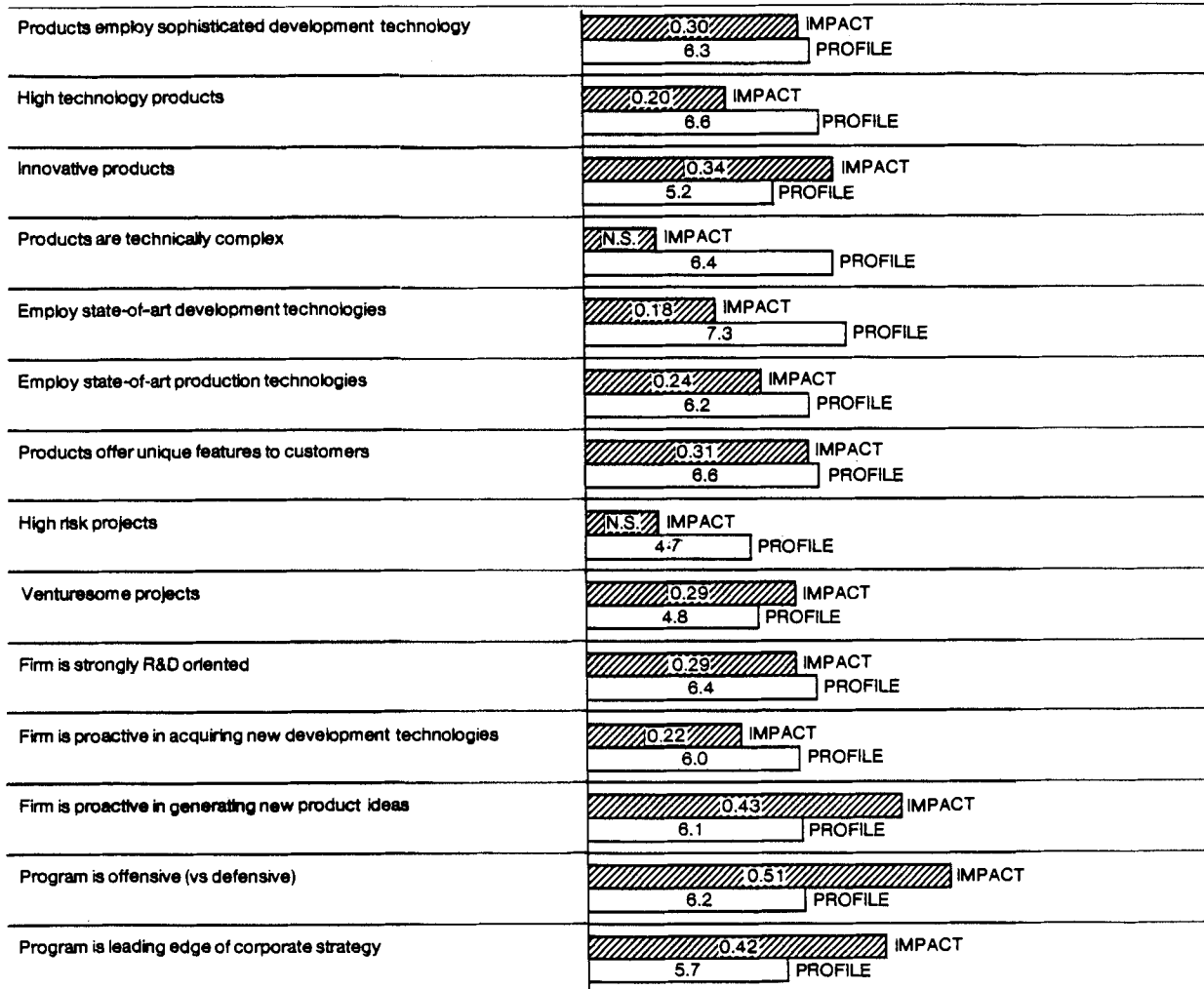
**Market need and offensive orientation:** firms which have an offensive new product program, are active in searching for ideas, use market research extensively for new products, and which are proactive in identifying market needs have a high relative performance.

**Marketing orientation and domination:** firms whose new product program is strongly market oriented and dominated by a marketing group, which are proactive in identifying market needs, and whose new product ideas are market derived have a high relative performance.

Marketing synergy is also important to performance. High relative performance firms select new product markets where there is a good fit with the existing sales force and channels, promotion and advertising skills, and market research resources. Note that marketing synergy has a negative effect on program impact, however.

Selecting markets with a high potential, size, and growth is another market strategy leading to high rela-

**Exhibit 7. Technological Sophistication, Innovativeness, and Aggressiveness: Profile of the Typical Firm and Effects of Individual Strategy Elements of Relative Performance<sup>a</sup>**



<sup>a</sup>Cross hatched bars indicate the correlation (0 to 1.0) between each strategy element and relative performance. N.S. means not significant. White bars give the profile of the typical firm (0 to 10 scale, where 10 is high).

tive performance. But seeking such lucrative markets does not, significantly, lead to a higher success rate nor a higher impact on the firm.

The final strategy dimension that results in a positive relative performance is a technological one, namely, production and technological synergy. Firms whose new products employ production and development technologies familiar to the firm, and fit the firm's engineering, R&D and production facilities and skills, have a higher relative performance than do other firms.

The message to managers is this. If the objective is a high relative performance program—one that meets

objectives, is profitable, fares well versus competitors, and overall is rated a success—then a union of technological prowess and a market orientation is required; not a "conservative" program, not a "brute force" program, but rather a well-balanced one that is technologically aggressive but closely tied to the marketplace.

Note that these two directions—technological prowess and market orientation—do not oppose each other. It is possible, indeed highly desirable, to feature both in a firm's new product strategy. Operationally, this means:

Utilize sophisticated and state-of-the-art development technologies, be strongly R&D oriented, and develop high-technology, innovative, technically complex, high-risk, new products.

Avoid highly custom products with a limited number of customers. Rather seek products with a broad market.

Have an offensive (as opposed to defensive) program, actively search for new product ideas, rely heavily on market research in your program, and be proactive in identifying market needs.

Your marketing department should play a central role in your new product program: develop a market orientation, focus on market need identification, and actively seek new product ideas from the marketplace.

Seek new product markets where you can utilize your existing marketing resources for your new products.

Pursue high potential, rapidly growing, large new product markets.

And finally, develop new products that utilize your in-house production, R&D and engineering skills, resources, and facilities.

### Strategies with No Performance Impact

Six dimensions of new product strategy have no apparent relationship to any of the three criteria of performance. Surprisingly, both descriptors that portray the competitive situation in the firm's new product markets are not tied to performance:

market competitiveness,  
competitive dominance.

Seeking markets that offer more resistance to entry—for example, markets characterized by intense competition, a dominant competitor, customers that are satisfied with and loyal to competitors' products—does not appear to detract from a firm's new product performance. At first glance, this result appears suspect. However, one might speculate that the reason why such markets are so competitive in the first place is because they are so lucrative (the field of electronic office equipment is an example). Thus the market attractiveness has been well read by competitors, the end result being a lucrative but competitive market. The positive

and negative aspects cancel each other, and performance is neither heightened nor diminished.

A third market descriptor that has no strong link to performance is the degree of export orientation. Firms that view their new product markets to include export and world markets have no significantly better performance than firms with a domestic focus. However, export orientation is positively correlated with the program's impact on the company ( $r = 0.123$ ). The conclusion is that export orientation may heighten the impact of the new product program somewhat, but there are many other strategic dimensions with a much stronger influence.

The final market dimension with no effect on new product program performance is market need newness. Firms that seek to serve new needs with their products—needs they have not served previously—fare no worse than do other firms. Note however that another dimension, market newness—new customers, new channels, etc.—does detract from performance. The message is that serving new needs is not a negative strategy, provided the market is a familiar one to the firm; that is, the same customers, the same sales force and channels, and so on.

One product strategy that surprisingly has no influence on performance is differential advantage: product quality and superiority. Previous research has often pointed to product advantages or quality as a factor in success [3, 4]. The current research identified two dimensions of product advantages: quality and superiority, that portray product reliability, durability, and the ability to meet customer needs better; and a second advantage, that relies more on unique product features, impact on the customer, and customer cost reduction. An example of the first product advantage dimension (superiority and quality) is an office telephone system (PBX) that has better voice quality, is more rugged and durable, and has less down time. The second product advantage dimension (features and impact) describes the office telephone system, but one loaded with features such as call redirect, conference call capabilities, call sequencing, etc. Both products have advantages and are premium products, but in quite different directions.

It is this second facet of differential advantage—product features—that is positively related to both success rates and impact on the firm. Perhaps, product features, impact on the customer, and cost reduction are much more visible benefits than product durability and reliability; and this visibility explains why a strat-

egy emphasizing feature advantages appears more successful.<sup>5</sup> So product differentiation, based on features and benefits, appears more critical than product quality in the traditional sense.

The final dimension with no effect on performance is launching big ticket, high priced products. Note that there was no a priori reason to suspect that pursuing such products would lead to better or worse performance. This neutral result supports findings in previous research.

## Conclusions

Firms' new product programs can be consistently more successful. Some of the firms we studied experienced an outstanding new product performance:

- a high success rate of products developed;
- a high impact on corporate sales and profits;
- and a high relative performance.

The only disconcerting evidence was that few firms demonstrated proficiency on all three criteria simultaneously.

By comparing the performances and strategies of a large number of firms, we were able to identify a number of strategic directions that were closely linked to success. There was nothing profound or bizarre about these success strategies; nor are the strategies we recommend for each type of performance unreasonable or unrealistic. Moreover, the factors underlying strong performance are amenable to management action. We know they are reasonable and operational, simply because so many firms had discovered success via these strategies.

Companies must first take a close look at the types of performance they desire. Note that in this study, we have not made any judgments about what type of performance might be "best" for any one firm. These questions must be decided by top management, namely: is it a high success rate we seek—a program with a strong "batting average"? Or are we looking for a high impact program—one that has a pronounced effect on the total performance of the firm? Perhaps a high relative performance is the goal—a program that fares well overall, matches competition, and is generally profitable? A new product program that achieves all three

goals may be unrealistic, simply because the strategies that lead to each goal are different.

If a high success rate is the objective, then a relatively conservative strategy is called for. Avoiding the unfamiliar in terms of both markets and products, and seeking high synergy projects—ones that build on your firms' technological and production skills and resources—is the answer. Success in such programs also hinges on developing products with a differential advantage in terms of visible benefits for the customer. So the keys to a high success rate program parallel closely the recommendations from studies on why individual products succeed.

But if other types of performance are desired, then a more aggressive program is called for. And here is where our study's conclusions differ from those of other investigations with a more narrow focus on individual products. High-impact and high relative performance programs both demand technological aggressiveness: innovative, higher risk, technically complex products relying on sophisticated, state-of-the-art technologies coupled with a strong R&D orientation. High-impact programs also call for heavy R&D spending, a concentrated program in terms of markets, technologies, and products, and entering markets that are not necessarily synergistic with the firm's marketing resources. In contrast, high relative performance programs point to a more balanced program: one that features technological aggressiveness but in concert with a strong marketing orientation. This means seeking products with a broad market, in rapidly growing, high-potential markets, and in markets where the firm's existing marketing resources can be utilized. A proactive market stance—actively searching for new ideas, seeking market needs, and relying on market research—together with a market oriented and marketing dominated program are also important strategies for a high relative performance.

A successful new product program is the goal of most corporations. But success does not happen by chance. Performance, however defined, is closely tied to the strategy the firm elects. A more conscious consideration of the types of performance sought and the corresponding strategies should do much to enhance firms' new product efforts.

## References

1. Bennet, Roger C. and Cooper, Robert G. The misuse of marketing—an American tragedy. *Business Horizons* 24(6):51–61 (1981).
2. Cooper, Robert G. Why new industrial products fail. *Industrial Marketing Management* 4:315–326 (1975).

<sup>5</sup>Note: No attempt was made to measure relative prices of products, and hence price–value relationships. Price–value considerations could also explain why a high durability, high reliability product strategy fared no better.

3. Cooper, Robert, G. Identifying industrial new product success: Project newProd. *Industrial Marketing Management* 8:124–135 (1979).
4. Cooper, Robert G. The dimensions of industrial new product success and failure. *Journal of Marketing* 43(3) (Summer 1979).
5. Cooper, Robert G. A process model for industrial new product development. *IEEE Transactions on Engineering Management* EM-30 (1):1–11 (Feb 1983).
6. Crawford, C. Merle. Defining the charter for product innovation. *Sloan Management Review* 3–12 (Fall 1980).
7. Day, George S. A strategic perspective on product planning. *Journal of Contemporary Business* 1–34 (Spring 1975).
8. Gold, Bela. Rediscovering the technology foundations of industrial competitiveness. Editorial in *OMEGA* 8(5):503–504 (1980).
9. Hopkins, Davis S. *New Product Winners and Losers*. Conference Board Report No. 773 (1980).
10. Kantrow, Alan M. The strategy-technology connection. *Harvard Business Review* 6–21 (July–Aug 1980).
11. Maidique, M. A. and Patch, P. Corporate strategy and technological policy. In: *Readings in the Management of Innovation*, M. L. Tushman and W. L. Moore (eds.). Marshfield, Mass: Pitman, 1982, p. 273.
12. Nystrom, H. *Company Strategies for Research and Development*. Report from the Institute for Economics and Statistics, S-750 07, Uppsala, Sweden, 1977.
13. Quinn, J. B. Managing strategic change. *Sloan Management Review* 21(4):3–20 (1980).
14. Rothwell, Roy. Factors for success in industrial innovations. *Project SAPHO—A Comparative Study of Success and Failure in Industrial Innovation*. Science Policy Research Unit, University of Sussex, Brighton, U.K., 1972.
15. Rothwell, Roy. Innovation in textile machinery: Some significant factors in success and failure. *SPRU Occasional Paper Series*, No. 2, University of Sussex, Brighton, U.K., 1976.

# The Stage-Gate International Advantage

## How we can help you win at product innovation

**Results**  
proven track record  
helping companies  
improve their  
product innovation  
capabilities

**Reach**  
successful client  
engagements across  
numerous industries,  
countries and  
cultures

**Experience**  
breadth and depth  
via front line  
experience with  
5000+ clients

**Research**  
comprehensive,  
peer reviewed and  
longest running  
benchmark studies

**Leadership**  
The world's most  
respected experts in NPD –  
Dr. Robert G. Cooper and  
Dr. Scott J. Edgett



**benchmarker**  
evaluate • isolate • innovate

**SG navigator™**



Complementary solutions tailored to your company's unique needs

### Consulting Services

- **Transformation Solutions**
  - Stage-Gate® Systems Design
  - Product Innovation Strategy
  - Portfolio Management
  - Implementation Support
- **Performance Assessments**
  - Validate strengths and uncover improvement opportunities
- **Corporate Training Programs**
  - 10+ innovation courses to build skills and drive progress

### Leading Edge Products

- **Benchmarker™**
  - Compare your performance against industry standards and best performing companies with the world's largest and most comprehensive innovation database
- **SG Navigator™**
  - Authentic Stage-Gate system, ready for immediate implementation in your organization

### Thought Leadership

- **Speaking services**
  - Motivational presentations by Robert Cooper and Scott Edgett
- **Publications**
  - Best-selling books, articles and research reports
- **Public Seminars**
  - Dynamic learning sessions of critical product innovation topics

Stage-Gate International is the world's leading full-service provider of solutions which enable organizations to improve their Product Innovation and Portfolio Management capabilities and performance. Our clients include 5000+ organizations of all sizes across all industries.

+1-905-304-8797  
[www.stage-gate.com](http://www.stage-gate.com)

Visit our website and [subscribe](#) to receive the latest research, information and complimentary articles to keep you current in product innovation!

