New Product Screening Decisions in High Technology Firms: An Empirical Study

By

ULRIKE de BRENTANI
Associate Professor
Concordia University

and

ROBERT G. COOPER
Professor
McMaster University

FACULTY OF BUSINESS

McMASTER UNIVERSITY

HAMILTON, ONTARIO

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Ulrike de Brentani
Associate Professor,
Concordia University

Robert G. Cooper
Professor,
McMaster University

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INTRODUCTION

New products are essential to the growth and prosperity of high technology, industrial product firms. But developing and commercializing new products is a high risk and complex endeavor. Project selection remains a pivotal yet problematic decision area for the high technology firm. In practice, the majority of new products fail commercially or are cancelled prior to launch (Booz Allen & Hamilton, 1982; Cooper, 1982; Hopkins, 1980). Management must therefore evaluate and select carefully new product projects, particularly at the idea stage, to ensure that scarce resources are allocated to the most appropriate projects (McGuire 1973).

This paper presents the results of an investigation into the criteria that high technology, industrial product firms use in screening new product ideas. In particular, the study identifies the factors that these companies consider when making the initial decision to commit resources to a new product proposal.

THE SCREENING PROBLEM

Most new product projects are destined to fail. A recent study by Booz Allen & Hamilton (1982) showed that for every seven new product ideas, **only one** becomes a commercial success. Indeed, an estimated 46% of the resources that U.S. firms commit to new product development are spent on products that fail or are cancelled.

The high attrition and failure rate of new products coupled with the costs and importance of product innovation points to project evaluation and selection as a critical facet of the new product process. A formal and continuous project evaluation system is one key to reducing the failure rate and to minimizing resource misallocation (Baker and Pound, 1964; Mansfield &

Wagner, 1972; McGuire, 1973; Wind, 1982). **Initial screening** is the first evaluation of a new product proposal, and represents the initial decision to commit resources to a project. Screening is a pivotal decision point because more new product projects are "killed" here than at any other stage of the process (Booz Allen & Hamilton, 1982). Screening decisions thus largely decide the portfolio of products the firm eventually develops and commercializes (Cooper, 1981).

Over 150 formal evaluation models have been developed to help managers make new product GO/KILL decisions, and many of these are for use at the screening stage. These models generally fall into one of four categories (Baker & Freeland, 1975; Augood, 1979), namely:

- o Benefit Measurement Models, including project comparisons, profile charts, checklists and scoring models.
- o Benefit Contribution Models, including economic return models, cost/benefit models, financial indices, and probabilistic risk analysis models.
- o Portfolio Selection/Resource Allocation Models, including multi-project, multi-stage constrained optimization techniques.
- o Market Research Methods, including perceptual and preference mapping, and concept tests with consumer panels or focus groups.

In spite of the attention given such models in the literature, there is little evidence that many see widespread application as a screening tool (Baker & Pound, 1964; Baker & Freeland, 1975). Industry surveys indicate that a great many firms use no formal approach at all in screening new product ideas, and that among formal models, only checklists, scoring models and financial indices are regularly employed (Baker, 1974; Gear, 1974; Hopkins, 1980; McGuire 1973). Considering the lack of reliable data at the idea stage, and the large number of proposals that require evaluation, Souder concludes

that scoring models are "highly suitable for preliminary screening decisions where only gross distinctions are required among projects" (Souder, 1972).[1]

In the implementation of checklist or scoring models, however, managers must first agree on a set of criteria that will constitute the items or questions in the checklist, and must prioritize and "weight" these in the case of a scoring model. The literature does provide guidance in the form of lists of recommended criteria in published scoring models. But a major deficiency with such published models is that they are not empirically based, and only contain criteria that their authors believe should be important screening factors i.e. factors based largely on speculation and/or personal experience. An indication of the arbitrariness of such models is the lack of agreement among authors: these published models vary considerably both in their level of detail and on the specific attributes (and even categories of attributes) they consider. A second deficiency is that industry specific differences tend to be overlooked in published models: these models are often presented as "general models", applicable across many industries. Yet certain criteria that are important in a high technology industrial products firm are probably irrelevent to the decision-maker in a low technology, consumer goods company, and vice versa .

What is required is an examination of the way managers actually make screening decisions. Understanding current decision behavior -- the criteria that are used, and how they are combined -- is an important first step in developing a decision model for use in future projects. This paper presents the results of such an investigation into the criteria that are used in new product screening in high technology industrial firms. The industry type, namely high technology, industrial goods firms, was chosen as the focus of the

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[1]This conclusion is echoed by other authors. See: Albala, 1975; Baker & Freeland, 1975; Baker, 1974; McGuire, 1973; Hopkins, 1980; Wind, 1982.

study because of the importance of new products to such firms, and because of industry uniqueness (i.e. managers in this type of industry are likely to employ a different set of criteria than in other industries).

DATA COLLECTION

A sample of high technology industrial firms was contacted to provide data on their new product screening practices.[2] Since not all firms develop new products on a regular basis and many lack an explicit screening procedure, the sample was restricted to large firms and/or to those with an active new product program. This sample bias was deliberate to ensure data realism. Companies in electronics, chemical and other R&D-oriented industries were well represented. Table 1 provides a breakdown of firms by industry in the eventual sample.

Data collection was carried out in two phases. Phase I was exploratory. Personal interviews with 45 managers, responsible for new product development in each of 45 firms, identified the attributes managers consider when screening new product ideas. Both direct and indirect attribute elicitation techniques were employed during the interview:

- o attribute elicitation: managers were directly asked to indicate what screening criteria they used.
- o modified reportory grid: respondents were asked to compare several recently screened proposals, and to indicate how each proposal differed from the others in terms of the reasons for the GO/KILL decision. By shifting the focus from screening criteria to actual projects, a number of additional criteria were uncovered.

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[2]The firms were located in Ontario and Quebec, Canada. The primary source of firms was: Directory of Scientific and Technological Capabilities in Canadian Industry. Ottawa, Canada: Ministry of State, Science and Technology, 1977. Addendum, 1980.

Table 1

BREAKDOWN OF FIRMS AND CASES BY INDUSTRY: PHASE II

Industry	Firms		New Product Cases	
	Number	% of Total	Number	% of Total
Electrical, Electronics and Communications	26	44.1	130	35.1
Chemical	9	15.3	60	16.2
Pulp and Paper	4	6.8	26	7.0
Avionics	2	3.4	16	4.3
Industrial Equipment/ Apparatus	3	5.0	22	5.9
Construction Materials	3	5.0	24	6.5
Metal Products	3	5.0	24	6.5
Petroleum	2	3.4	22	6.0
Other[a]	7	12.0	46	12.5
TOTAL	59 Companies		370 Cases	

[a]Other industries included: nuclear (medial equipment), truck manufacturing, industrial detergents, lasers, rubber products (industrial etc.).

- o list completion: a comprehensive list of screening criteria, developed from the literature, was shown respondents, who were then asked to check off or add criteria that they used.
- o summarization: respondents were asked to specify the five most important considerations -- global screening criteria or main dimensions -- used in evaluating new product ideas.

Phase II involved obtaining rating data on each of a large number of actual new product cases: projects which had been recently screened and for which a GO/KILL decision had been made. A questionnaire was developed, based on the attributes identified in Phase I. The questionnaire was pre-tested on screening experts and on a sub-set of managers to ensure its reliability.

The questionnaire was then mailed to a sample of managers involved in new product screening identified during Phase I. These managers were asked to rate each of two new product proposals -- one accept, one reject -- which their firm had recently considered, in terms of each of 86 attributes. Seven-point Likert scaled questions were used to obtain ratings. The questionnaire thus ressembled a scoring model questionnaire, similar to one that might be used to screen product ideas.

Data was eventually collected for 370 product proposals from 282 managers in 63 firms (see Table 1). The effective response rate was 66%.[3]

DATA ANALYSIS

Two types of data analysis were used to identify the major dimensions by which new product proposals are evaluated. First, content analysis of the summary screening dimensions (Phase I: summarization) revealed 63 evaluative dimensions. These dimensions were categorized and collapsed to yield a "prior

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[3]The 63 firms comprised the 45 from research Phase I and 18 additional firms. A total of 59 of the 63 firms and 192 of the 282 respondents co-operated in Phase II. In five cases, only "accept" projects were rated; nine cases were eliminated due to missing data.

model" comprised of six criteria groupings (Table 5). The classification was based on subjective appraisal of which criteria were related to one another, and hence could be grouped together. The result was a set of criteria categories similar to those in published models (O'Meara, 1961; Dean, 1968).

The second facet of the data analysis was objective. Factor analysis (principal component analysis with varimax rotation) was used to reduce the 86 screening attributes, rated in Phase II, to eleven orthogonal dimensions to yield the "factor model". The choice of the eleven factor solution was based on the scree test (Cattell, 1968; Green, 1978), the number of groupings suggested by the "prior model", and the Cronbach alpha construct reliability test (Horn, 1969; Churchill, 1979). The eleven factors explained 49.1% of the variance in the original 86 variables.

RESEARCH FINDINGS

The factor analysis revealed that eleven composite dimensions describe the screening domain of high technology industrial product firms. These eleven factors serve to reduce the complex and highly interrelated set of screening items to a much more parsimonious group of independent evaluative dimensions. Each of the screening factors was readily interpreted and found to be a reliable measure of the particular construct. Table 2 indicates the variance explained by each factor and the factor's reliability coefficient. Table 3 shows the composition of each factor and the factor loadings.

A review of the eleven screening dimensions shows that they fall into one of four main categories:

- o magnitude of the opportunity.
- o synergy or fit with the current business.
- o economic performance and financing.
- o corporate strategy.

Table 2

SCREENING DIMENSIONS: 11 FACTORS
(Based on Factor Analysis)

	FACTOR NAME	% of Variance Explained	% of Variance in 11-Factor Solution	Reliability Coefficient[a]
F1.	Product Differential Advantage	13.4	27.3	0.90
F2.	Corporate Synergy	10.4	21.2	0.89
F3.	Technological & Production Synergy	4.5	9.2	0.79
F4.	Project Financing	3.7	7.5	0.69
F5.	Financial Potential	3.3	6.7	0.80
F6.	Size of Market	3.0	6.1	0.65
F7.	Diversification Strategy	2.6	5.3	0.65
F8.	Market Maintenance Strategy	2.3	4.7	0.69
F9.	Product Life	2.0	4.1	0.49
F10.	Rational Customer	2.0	4.0	0.46
F11.	Domestic Market	1.9	3.9	0.47
		49.1	100.0	

[a]Cronbach alpha coefficient greater than 0.50 is considered an acceptable measure of construct reliability (Nunnally, 1978; Peter, 1979), although it should be noted that the inferential properties of this measure are not known.

Table 3

SCREENING DIMENSIONS AND FACTOR LOADINGS
(Based on Factor Analysis)

Dimension or Factor Name	Variables Loading on Factor	Factor Loading
F1 Product Differential Advantage	First to introduce product to market	0.783
	Opportunity to become technological leader in market	0.777
	A revolutionary innovation	0.724
	Clearly differentiated from competitors' products	0.703
	Achieves an important technological strength	0.690
	Makes the firm a major entity in the market	0.605
	Involves the application of a different technology to a problem	0.604
	(Not) similar to competitive offerings	-0.582
	Product is patentable	0.572
	Product is of higher quality than what is on the market	0.564
	Technologically delivered product - in house	0.564
	Requires considerable technological expertise	0.553
	Produces important savings for customer	0.528
F2 Corporate Synergy	Uses firm's distribution and salesforce	0.827
	Fits firm's present business	0.771
	Aimed at firm's current customers	0.761
	Uses firm's marketing research resources	0.737
	Fits the firm's organizational set-up	0.708
	Fits the firm's managerial capabilities	0.700
	Prospective competitors are known/understood	0.592
	Fits top management's preferences	0.571
	Fits into firm's corporate strategy	0.570
F3 Technological & Production Synergy	Uses firm's engineering/design resources	0.716
	Fits production facilities	0.704
	Firm knows production methods	0.702
	Product is comprised of current products or materials	0.584
F4 Project Financing	Outside funding is required	0.720
	Major customer investment is required	0.681
	Complex financing is required	0.647
F5 Financial Potential	Expected ROI/profit potential is high	0.673
	Expected sales growth is high	0.594
	Expected market growth is high	0.551
	Expected market share is high	0.481
	Likelihood of success is high	0.480

Cont'd....

Table 3 (Continued)

Dimension or Factor Name	Variables Loading on Factor	Factor Loading
F6	Market is a mass market	0.666
Size of Market	Market potential is large (dollar volume)	0.579
	Market is broad geographically	0.537
	Future market potential is high	0.495
	Product has variety of applications	0.475
	Aggressive competition	0.426
F7	A key to entering a new product class to firm	0.669
Diversification	Market has room for a new competitor	0.553
Strategy	A key to entering a new market to firm	0.552
	A key to entering a new technology to firm	0.482
F8	A defensive (maintain share) product	0.657
Market	A survival strategy	0.632
Maintenance	Replaces present products	0.518
Strategy	Represents a technological update/enhancement	0.467
F9	Product will not change for long time	0.649
Product Life	Future development pattern is clear and predicable	0.547
	Product has long expected life	0.484
F10	Customers use quantitative/objective decision criteria	0.559
Rational	Competition is oligopolistic, not monopolistic	-0.481
Customer	Customers understand product	0.452
	Customers are commercial as opposed to institutional users	0.409
F11	Market is a domestic one	0.657
Domestic	Competition is domestic	0.558
Market	Serves need previously poorly satisfied	0.410

The categorization scheme is summarized in Table 4. Many of the dimensions identified are familiar constructs; references to other research and screening models are also provided in Table 4. Each of the screening dimensions is now discussed by category.

Magnitude of the Opportunity

Screening dimensions which portrayed the magnitude of the opportunity dominated the screening decision. Together they explained 45% of the variance accounted for by all eleven factors. Questions considered by managers in assessing the magnitude of the opportunity included:

- o How strong an advantage will we achieve with this product?
- o How extensive or large is the market?
- o How easy is it to access the market -- is it nearby and familiar?
- o How long a life will the product enjoy?

These and a number of other questions were captured in the five independent screening dimensions which described the magnitude of the opportunity.

By far the most important single opportunity dimension was the **Differential Advantage** of the product (F1). Products which scored high on this dimension would be the first of their kind into the market, constituted a significant innovation, and would be clearly differentiated from competitors' products. Often they were higher quality products than what was on the market and produced cost savings for the customer. The product advantages achieved were closely connected to the technological prowess of the firm. Such products represented an opportunity for the firm to become a technological leader in the market, would achieve a position of technological strength for the firm, were patentable, required considerable technological expertise, and involved the application of a different or novel technoloogy to a problem.

Four additional dimensions played a role in describing the magnitude of the opportunity for a proposed product. **Market Size** (F6) included such

Table 4

SCREENING DIMENSION CATEGORIES

Categories and Dimensions	% of 11-Factor Variance Explained	Previous Studies Identifying Similar Dimensions
MAGNITUDE OF OPPORTUNITY	**45.4**	
- Product Differential Advantage (F1)	27.3	Albaba, 1975; Cooper, 1979a, 1979b, 1980; McGuire, 1973; O'Meara, 1961.
- Size of Market (F6)	6.1	Augood, 1979; Baker, 1974; Cooper, 1979a, 1979b, 1980; Dean, 1968; McGuire, 1973.
- Product Life (F9)	4.1	Albaba, 1975; Bradbury et al, 1973; Mottley and Newton, 1959.
- Rational Market (F10)	4.0	Pessemier, 1982; Urban and Hauser, 1980; Udell and Baker, 1977.
- Domestic Market (F11)	3.9	Baker, 1974; Cooper, 1983; Mansfield and Wagner, 1972; O'Meara, 1961.
SYNERGY WITH CURRENT BUSINESS	**30.4**	
- Corporate Synergy (F2)	21.2	Augood, 1979; Bradbury et al, 1973; Cooper, 1979a, 1979b, 1980; McGuire, 1973.
- Technological & Production Synergy (F3)	9.2	Augood, 1979; Bradbury et al, 1973; Cooper, 1979a, 1979b, 1980; McGuire, 1973.
ECONOMIC PERFORMANCE AND FINANCING	**14.2**	
- Project Financing (F4)	7.5	Augood, 1979; McGuire, 1973; Mottley and Newton, 1959.
- Financial Potential (F5)	6.7	Albaba, 1975; Baker, 1974; Becker, 1980; Dean, 1968.
CORPORATE STRATEGY	**10.0**	
- Diversification Strategy (F7)	5.3	Bradbury et al, 1973; Cooper, 1983.
- Market Maintenance Strategy (F8)	4.7	Becker, 1980; McGuire, 1973; Mottley and Newton, 1959.

characteristics as whether the market contained many customers, versus one or a few potential clients; the size or dollar potential of the market; the breadth of market and scope for applications of the product; and the growth potential of the market.

Product Life (F9) was another gauge of the opportunity. Here, managers considered whether or not the product would remain unchanged for a long time (stability), whether the future development pattern was clear and predicable, and the expected length of life of the product.

Another factor, **Rational Market** (F10) points to managers' concern about customer knowledgeability and the customer's use of objective buying criteria. In short, managers questioned whether the eventual market success of the product was dependent on rational, knowledgeable customers, versus less predicable buyers.

Finally, managers considered the ease of access to and familiarity with the market in the factor, **Domestic Market** (F11). New product markets which were domestic and involved domestic competitors were familiar ones to managers, hence represented fewer uncertainties and risks; also such markets were thought to be easier to access.

Synergy with the Current Business

The second most important category of screening dimensions was synergy or fit with the firm and its current business. Synergy or "fit" portrayed the degree to which the new product could utilize or build on existing resources within the firm; that is, achieve a higher level of success or profitability by utilizing available resources at marginal cost.

Two screening factors captured synergy, and together explained 30% of the eleven-factor variance:

- **Corporate Synergy.**
- **Technological and Production Synergy.**

Corporate Synergy (F2) was the more important of the two. Products rated high on Corporate Synergy were aimed at the firm's current customers, used the company's existing distribution and salesforce system, fit the firm's market research resources, and pitted the firm against competitors it had faced before. Marketing synergy was therefore an important facet of corporate synergy. But there were other considerations: synergistic projects were closely related to the firm's current business, fit the firm's organization set-up and managerial capabilities, and matched top management's preferences.

In contrast, **Technological and Production Synergy** ((F3) was more focused. Managers considered whether or not the project would employ the firm's engineering and design resources, and whether the product could be manufactured with the company's existing production facilities or equipment, utilized production techniques the firm already knew, and was comprised of products or materials the firm already possessed or made.

Economic Performance and Financing

Not surprisingly, financial questions entered the initial GO/NO GO decision. Note, however, that economic performance and financing questions ranked third, and considerably far behind those criteria that gauged the magnitude of the opportunity and the synergy with the firm. Two dimensions described these economic criteria, and together accounted for 14% of the eleven-factor variance explained:

- **Project Financing.**
- **Financial Potential.**

Project Financing (F4) entered the initial GO/NO GO decision in many firms. Both the complexity of required financing and the source of funding (developer, customer or government) were important screening items. Source of funding was especially significant to high technology firms, since projects involving certain types and levels of R&D were eligible for government

financing.

At the same time, evaluators used a number of **Financial Potential** criteria (F5) when assessing the attractiveness of a new product proposal. These criteria were of a basic and normative nature, including: expected market growth, rate of sales growth, share of market, return on investment or profit potential, and the likelihood of project success. Note, however, that many managers were quick to point out that such financial and quantitative estimates were extremely unreliable at the screening stage, and were used with skepticism in project screening.

Corporate Strategy

A final category of screening dimensions pertained to the new product's role in the total corporate strategy. Surprisingly, this was a relatively unimportant category, accounting for only 10% of the all-factor variance. Two screening dimensions gauged the strategic role of the new product under consideration:

- **Diversification Strategy.**
- **Market Maintenance Strategy.**

Diversification Strategy (F7) depicted whether or not the product represented an opportunity for entering a new market, a new technology or a new product class. **Market Maintenance Strategy** (F8), on the other hand, described the defensive character of the proposal. Does the proposal involve a product replacement or a technological enhancement that can help the firm to maintain its strategic position in the market or industry? Both strategic issues are logical considerations in the new product screening decision. Not only are the Diversification and Maintenance Strategy criteria useful in characterizing the project's risk level, but they describe the firm's strategic position with regard to its technology, market and industry.

VALIDATION OF SCREENING CRITERIA

Are the eleven factors identified in the research a valid representation of the new product screening domain of high technology industrial product firms? Validity is essential if the findings are to play a role in developing future screening models. This validity question was tested in two ways. One approach involved comparing the eleven evaluative factors and their groupings with those previously cited in the literature. In the second approach, the Phase II factor model of screening dimensions, based on objective ratings and factor analysis, was compared with the Phase I prior model, based on the elicited summary of dimensions.

The eleven screening dimensions and four major categories are each supported by other research or previously published models (See Table 4 for references). In the case of all eleven screening factors, at least one reference could be found: either the factor had been uncovered in previous research or had been used in a published scoring model. Thus the screening dimensions identified appear to have external validity. The point needs reinforcing, however, that no one study or published model contained all eleven factors identified here.

A second approach to validating the factor model is to view the factor analysis less as a purely exploratory device to suggest dimensions, and more as a confirmatory instrument to confirm or refute components isolated by other means. A prior model of screening criteria was developed using the summary dimensions provided by managers in research Phase I (see Table 5). Since this model is based on interviews with knowledgeable managers (or "experts" in the field) conducted by expert and knowledgeable interviewers, it clearly meets with the requirements of basic construct research (Nunnally, 1978; Churchill, 1979).

According to the prior model, ten basic dimensions underlie new product screening. Table 5 provides a detailed description of each of these dimensions and compares them to the criteria in the factor model. In both models, the number of dimensions and their composition are very similar. To some extent, this could be expected since both models were derived from different portions of the same basic interview. Nevertheless, given the subjective nature of content analysis, it is important to note that the analytically derived and more objective factor model clearly supports the prior model. Although the relationships among factors are one-to-one in only some cases (orthogonality is difficult to achieve in a subjective content analysis), each dimension is definitely accounted for by one or more factors. Again, the validity of the eleven factor portrayal of the screening domain is supported.

SUMMARY AND CONCLUSIONS

The research has identified the major evaluative criteria employed in new product screening in industrial product, high technology firms. Although many lists of screening variables have been presented in the literature, most are not empirically founded and very few pertain specifically to industrial, higher technology products. By using a number of interview techniques (direct and indirect) to elicit information, a comprehensive list of 86 screening attributes was empirically derived. This list was subjected to several forms of data analysis (objective and subjective) to determine and to validate the precise number and particular nature of the major evaluative dimensions.

A descriptive model of eleven underlying screening dimensions was developed. These dimensions were further categorized into four basic criteria groupings. When screening new product proposals, of particular concern to managers is the **Magnitude of Opportunity** that a new product represents. The market potential, the expected life of the product, and the differential

Table 5

FACTOR (EMPIRICAL) MODEL FIT WITH PRIOR MODEL

PRIOR MODEL	FACTOR MODEL
1. MARKET DIMENSION	
- Size and growth of market or market segments; share of market; number and size of customers; market needs and demands; potential market share; newness to market.	F5 - Financial Potential (Market size) F6 - Size of Market F10 - Rational Market
2. MARKETING DIMENSION	
- Marketing synergy; market/customer fit; market leadership; ability to and cost of marketing; required human resources (marketing).	F2 - Corporate Synergy (marketing fit) F8 - Market Maintenance Strategy F11 - Domestic Market
3. CORPORATE SYNERGY/STRATEGY	
- Fit with corporate objectives, mandate, strategy, expertise and business; corporate leadership and image; overall level of corporate risk.	F2 - Corporate Synergy
4. TECHNOLOGICAL DIMENSION	
- Technological leadership, fit, balance and risk; required technological resources; product innovativeness; technological sophistication and dynamism.	F1 - Product Differential Advantage (technological) F7 - Diversification Strategy (technological)
5. PROFITABILITY AND FINANCIAL	
- Required captial investment; investment/risk balance; profitability, costs, timing and pay-out risk.	F4 - Project Financing F5 - Financial Potential (profitability)
6. COMPETITIVE DIMENSION	
- Extent and type of competition; competitive advantage and strategy; competitive position/positioning and pressure; product uniqueness.	F1 - Product Differential Advantage F7 - Diversification Strategy (market)

Table 5 (continued)

7. PRODUCTION DIMENSION	
- Production and technical synergy; technical feasibility, risk and complexity; production economies (for firm and customer); required production resources.	F3 - Technological & Production Synergy
8. PRODUCT/MARKET TIMING	
- Stage in product life cycle; product development time (required and available); expected life; market timing.	F9 - Product Life
9. SOURCE OF IDEA	
- Corporate versus market input; source credibility	F1 - Product Differential Advantage (source of idea - market)
10. GOVERNMENT/REGULATORY DIMENSION	
- Government support; regulations; societal issues.	F4 - Project Financing (government funding)

[a]Several factors appear more than once since model fit is not one-to-one. Items in parentheses refer to the element(s) in that factor which correspond to the particular prior model dimension.

advantage of the product are important evaluative items. **Synergy With the Current Business** also plays an essential role. Clearly, managers are concerned about the proximity and fit of the new product to the current business. Issues of familiarity and resource utilization underlie this concern. **Economic Performance and Financing** identifies a third category of criteria that is closely linked to corporate objectives. Although at the early screening stage, financial estimates often are tentative and unreliable, companies nevertheless include financial dimensions as part of the screening decision. **Corporate Strategy** is a final screening concern: When assessing new product ideas, managers consider whether the product successfully defends the firm's market and competitive position or extends the firm's interests outside of its present sphere.

The results of the research provide useful insights into industrial new product screening decisions. The study reveals that managers in larger, higher technology companies consider screening criteria that are similar to the evaluative dimensions they claim they use (convergence of prior model and factor model). This result suggests that, for these firms, new product screening has become less of a "hit-and-miss" procedure than what it may have been in the past. This finding is consistent with recent literature (McGuire, 1973; Wind, 1982) and supports the notion that, increasingly, firms are attempting to employ a formal or consistent procedure for screening new product ideas.

Screening models have not been successful in the past because the criteria they employed may not have been totally relevant to the firms considering their application. But selecting new product projects without a formal or consistent screening approach is likely to lead to selection errors and the resulting misallocation of scarce resources. By identifying the screening dimensions used in high technology firms, the current research has

provided a starting point to the development of an operational and practical new product screening model.

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