

INTERACTIONS BETWEEN MARKETING AND R&D DEPARTMENTS IN IMPLEMENTING DIFFERENT BUSINESS STRATEGIES

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This paper examines how interactions between marketing and research and development personnel vary across business units pursuing different strategies. Based on the Miles and Snow typology of strategy, several propositions concerning the extent of interdepartmental conflict, the structures used to manage and resolve such conflicts, and the perceived effectiveness of the interaction between marketing and R&D are developed. These propositions are empirically tested in a study of marketing personnel from three divisions of a large Fortune 500 company. The results of this preliminary test indicate that conflict between the two departments is greatest under a prospector business unit strategy. The degree of formalization and the use of different forms of conflict resolution mechanisms only partially conformed to the predictions of Miles and Snow, but were strongly linked to respondents' assessment of the effectiveness of relations between the two functional areas.

In order to achieve a competitive advantage in the marketplace a firm needs a product with attributes that are: (a) better than—or at least different from—those offered by competitors, and (b) perceived to have value exceeding the product's cost by a substantial segment of customers. This need for both technical differentiation and a good product–market 'fit' underscores the importance of a creative, cooperative partnership between members of the R&D and marketing departments to the success of a firm's product improvement and new product development efforts (cf. Souder, 1981; Wind, 1981; Pessemier, 1977). The interdependence of marketing and R&D is perhaps best stated by Butler:

The fact is that our research and development activities and our marketing activities are very interdependent. Without a flow of significant innovations coming from the development effort, our marketing team could not be effective. Without an effective marketing team which can translate useful innovations and technological advances into profit-making innovations, our research and development organization could not long pay its bills (1976: 7).

Unfortunately, in many companies relations between these two departments are more often characterized by conflict than by creative co-operation.

A number of researchers have examined how different functional departments do—or should—interact with one another. Many articles focus on the causes of inter-functional conflicts and on mechanisms for resolving them (cf. McCann and Galbraith, 1981; Wind, 1981). A few studies have even explicitly examined such issues within the context of marketing–R&D relationships (Weinrauch and Anderson, 1982; Souder, 1981).

Most of the existing studies, however, have examined interfunctional interactions across a wide variety of firms or strategic business units without paying much attention to variations in the environments faced, or the strategies being pursued, by those businesses. This is a short-coming of some concern since recent efforts to formulate and study typologies of business strategies (e.g. Miles and Snow, 1978; Porter, 1980) suggest that businesses pursuing different types of strategy are likely to (1) devote different amounts of emphasis and resources to product

development efforts, and (2) have marketing and R&D departments with differing levels of influence, resources and competencies (Snow and Hrebiniak, 1980). Consequently it seems reasonable to suppose that the nature of the interactions between marketing and R&D personnel also vary across business units with different strategies, and that such variations may have important implications for the effective implementation of those strategies.

OBJECTIVES

The purpose of this paper is to examine how (1) the amount of conflict between marketing and R&D personnel, (2) the organizational structures used to reduce and resolve them, and (3) their impacts on the effectiveness of the interfunctional relationship, vary across business units with different strategies. The next section reviews the relevant literature and develops a set of research propositions. The propositions are then tested with data drawn from 95 respondents employed by three business units pursuing different strategies within the same *Fortune* 500 manufacturing firm. Finally, implications for further research and for the management of the marketing–R&D interface are discussed.

PREVAILING WISDOM AND RESEARCH PROPOSITIONS

While a thorough review of the literature on interfunctional conflict is beyond the scope of this paper, the following sections briefly review the evidence germane to three interrelated issues which underlie much of that literature:

1. What factors influence the type and amount of conflict between functional departments within a business unit?
2. How can such conflicts be effectively resolved or managed within the organization?
3. What are the impacts of conflicts between two functional areas on the performance both of the organization and of the individuals involved?

The focus here is on the development of a set of specific research propositions which predict

the impact of the type of strategy being pursued by a business unit on each of the above three sets of variables.

The causes and levels of conflict

A number of authors attribute interfunctional conflicts to the strains produced by resource and workflow interdependencies between departments on the one hand, and to differences in their short-term objectives and their desires for autonomy on the other (Dutton and Walton, 1966; Van de Ven and Ferry, 1980; McCann and Galbraith, 1981). Such strains can be particularly strong in the relationship between marketing and R&D departments. While both commonly play key roles in the development of new products and line extensions, each department tends to focus on different aspects of the task. Marketers are primarily concerned with identifying and catering to customer preferences and fending off competitive threats, while R&D personnel focus on issues of technical feasibility and functional effectiveness. Since satisfactory and *compatible* answers to both sets of issues are necessary for new product success, each department is heavily dependent on the other for information and support. At the same time, however, their different perspectives can often lead to conflicting objectives and struggles for influence. For example, pursuit of technical sophistication and higher levels of functional performance by R&D sometimes runs directly counter to the desire of marketing and sales to maximize market share (Strauss, 1964).

Differences in the level of conflict under different business strategies

While the above arguments indicate that relationships between marketing and R&D are likely to be relatively conflictual, recent efforts by Miles and Snow (1978) and others suggest that the amount of conflict between the two areas may be mediated by the business unit strategy being pursued. While such a suggestion is not particularly new (e.g. Barnard, 1951), Miles and Snow's typology of prospector, defender, analyzer and reactor strategies¹ provides a framework for

¹ As defined by Miles and Snow, *prospector* business units follow an aggressive new product/market position within broadly defined markets and tend to be pioneers within the industry at the creation and development of new technologies.

developing propositions concerning how interactions between marketing and R&D personnel are likely to vary across business units pursuing different strategies.

The type of strategy being pursued by a business unit should be related to the amount of interfunctional conflict between the marketing and R&D personnel within that unit for two reasons. First, since different strategies are likely to be associated with different types of external environments (Lawrence, 1981), entail different functional objectives, and require different functional competencies, the choice of strategy is likely to have a direct effect on the types and amounts of conflict experienced across functional departments. Secondly, the implementation of different strategies often leads to different forms of organization structure within the business unit. So we shall argue in the next section of this paper that those structural differences can affect both the amount of conflict experienced by personnel in various functional departments and the mechanisms used to resolve the conflicts which do occur. These relationships among the environment, the chosen strategy, structural variables and conflict are shown in Figure 1.

The broad product-market domains of prospector business units and their emphasis on rapid new product and market development means they often confront a high degree of complexity and uncertainty in their operations. Defenders, on the other hand, commonly operate in more narrowly defined domains and in more mature, stable markets. Analyzer business units share

Defender business units, on the other hand, follow a conservative view of new product development and attempt to maintain a secure market position on a narrower segment of the market. Defenders often compete on price or quality and rarely introduce new technologies in the market. *Analyzer* business units represent an intermediate form of strategy sharing common elements from both prospector and defender business units. Analyzer business units maintain a secure market position within a core market, much like the defender, but are also seeking new market positions through new product development as prospectors. The fourth business unit strategy is labeled a *reactor* strategy, which represents the absence of any well-developed plan for competing within an industry. The three viable business unit strategies (prospector, defender and analyzer) differ along a continuum in terms of entrepreneurial effort in the marketplace. On the one extreme, prospectors pursue a strategy of intense new product and market development which provides dramatic growth in order to maintain profitability within a secure niche by focusing on efficiencies. Analyzers attempt to capture some of the strategic strengths of each of these by following an intermediate position by creating incentives for efficiency within the core business but also encouraging promising new product/market development.

qualities of both prospector and defender strategic types by operating within a stable core environment on the one hand, and attempting to generate new market opportunities on the other.

As a result of these differences in environmental complexity and uncertainty, we would expect to find variations in the level of conflict experienced between marketing and R&D departments across business units pursuing different strategies. The level of conflict should be low in defender business units since their environments are relatively stable and unambiguous. Conflict should be highest in prospector businesses due to the turbulent environments in which they operate. Finally, since analyzers share some of the traits of both prospectors and defenders, they should experience intermediate levels of interfunctional conflict between marketing and R&D.

P1: The level of conflict between marketing and research and development should be greater in prospector business units than in defender business units with analyzers exhibiting levels between the previous two.

Organizational structures and the management of conflict

While conflict between marketing and R&D is an acknowledged part of interaction between the two units, a second focus of the research in this area concerns how such conflicts can be managed and resolved by the organizational structures used by the managers in the business unit. Previous research suggests that structural variables play two roles in the management of interfunctional conflict. First, organizational structures can be created that minimize the likelihood that conflicts between marketing and R&D begin in the first place. Second, structures also can be instituted to resolve conflicts when they do arise.

Perhaps the most common structural variable used to prevent the occurrence of conflicts between marketing and R&D is the degree of formalization used to guide the interaction between the two departments (McCann and Galbraith, 1981). Formalization refers to the use of rules and standard operating procedures within an organization. Most of the literature in this area suggests that by formalizing the relationship between marketing and R&D personnel, conflicts

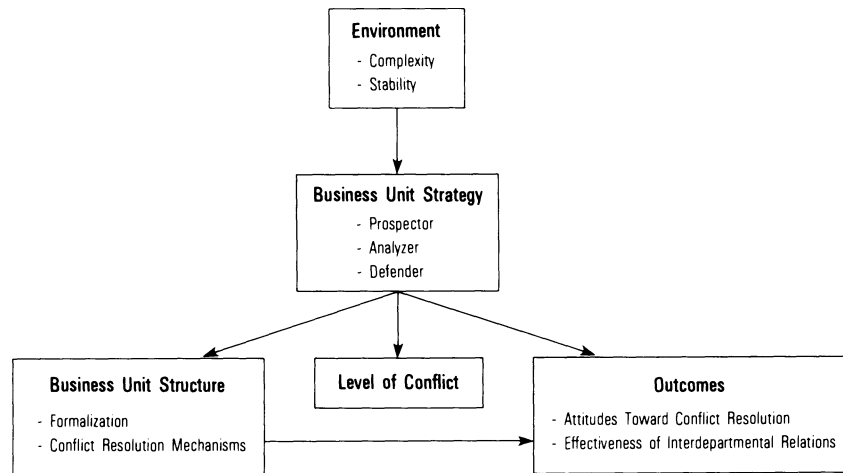


Figure 1. The impact of business unit strategy on the structure and consequences of the marketing and R&D interface

can be reduced. Rules and standard operating procedures serve the dual role of clarifying each party's role within the relationship and serves to constrain dysfunctional behavior.

Organizational structures and the level of conflict under different business strategies

Miles and Snow's description of the administrative structures and procedures employed by businesses pursuing different types of strategy suggests that both the degree of formalization used to prevent conflicts and the mechanisms they use for resolving interfunctional conflicts should vary by generic business unit strategy.

The primary administrative problem for prospectors is to develop organizational structures which enable them to adapt quickly to changes in complex and unstable environments. Because reliance on rigid rules and procedures, or high degrees of formalization, would limit their ability to deal effectively with complex and changing conditions, prospector business units are more likely to rely on organic forms of organization where formalized rules and procedures are replaced by informal and interpersonal modes of interaction.

Defenders, on the other hand, commonly operate in more stable environments, and have as their administrative problem the quest of efficient operations. In order to increase their efficiency they tend to develop more mechanistic or formalized structures and rely heavily on

explicit rules and standard operating procedures for coordinating activities across departments.

Finally, analyzer business units form an intermediate organizational type. In the core business, formalized structure should dominate. However, in the search for opportunities in new market areas we would expect more loosely structured arrangements between marketing and R&D.

P2: Defender business units rely on more formalized structures between marketing and R&D than prospector and analyzer business units.

Mechanisms for resolving conflicts under different strategies

No organizational structure, however, can totally prevent conflicts between marketing and R&D units from occurring. Thus each business unit must also develop means for coping with and resolving conflicts when they do arise. Previous research suggests that there are four common mechanisms for resolving conflicts between different functional departments: (1) ignoring or avoiding the issue; (2) smoothing over conflicts; (3) openly confronting issues; and (4) resorting to higher authority (Blake and Mouton, 1964; Lawrence and Lorsch, 1967; Burke, 1970; and Filley, House and Kerr, 1976).

In general, existing research suggests that ignoring or smoothing over conflicts are not effective means for resolving differences between

functional departments. Such approaches simply postpone the 'day of reckoning', and may allow differences of opinion to grow into interpersonal barriers far out of proportion to the initial disagreement (Van de Ven and Ferry, 1980). However, these mechanisms may be useful under conditions of information scarcity where postponement can provide additional time to develop more creative and effective solutions to interfunctional disputes.

The question of how to resolve interfunctional conflicts, then, largely involves a choice between active involvement by higher management versus allowing the parties themselves to work towards a mutually acceptable solution. McCann and Galbraith (1981) suggest that allowing the parties to develop their own solutions to disputes creates a shared appreciation of their common interdependencies, and is appropriate for highly uncertain situations where coordination is essential. On the other hand, hierarchical forms of conflict resolution are more efficient and can reduce the amount of time necessary to reach a decision.

Miles and Snow suggest that the mechanisms used to resolve conflicts once they occur should vary across business units pursuing different business unit strategies. We hypothesize that hierarchical mechanisms are more commonly used by defender business units because they reduce the costs in time and effort of resolving disputes. Such mechanisms are appropriate due to the efficiency criterion which guides many defender businesses. For the same reasons, participative, avoidance or conciliatory methods of conflict resolution are less appropriate for defender business units due to their high costs. Given the relative simplicity of the external environments such businesses often face, group processes are unlikely to generate much better decisions than a central decision-maker within the business unit, and the gains in the quality of decisions reached would not offset the higher costs in managerial time and effort.

On the other hand, the more complex and unstable environments faced by prospector business units makes it more likely that appropriate means/ends relationships will be unknown and that criteria other than efficiency—such as marketplace response—will guide the business unit. Hierarchical mechanisms for resolving conflicts are less effective in such units since kicking disputes upstairs often leads to rigid and uncre-

ative responses. Prospector business units should rely more heavily on the other three modes of avoidance, conciliation and participatory conflict resolution. When the conflicts are relatively minor, or occur under conditions of poor information, avoidance or conciliation can buy time for the organization. But as the importance of the conflict increases, participatory mechanisms can help ensure that diverse points of view will be taken into account and that both parties will respect and comply with outcomes of the decision. Indeed Miles and Snow (1978) suggest that prospectors sometimes employ organizational mechanisms especially designed to facilitate participatory approaches to resolving interdepartmental conflicts—such as liaison positions and new product teams.

P3: Defender business units rely more heavily on hierarchical modes of conflict resolution than prospectors or analyzer business units.

P4: Prospector business units will employ avoidance, conciliatory and participative conflict resolution mechanisms to a greater extent than defender or analyzer business units.

Conflict and organizational performance

A third dominant theme of the existing literature involves the impact of interfunctional conflicts on the performance of the organization and on the parties involved in such disputes. Two polar points of view have been offered. One suggests that interfunctional conflicts absorb large amounts of organizational resources and can lead to decisions which further individual department goals at the expense of organizational objectives, thereby reducing the overall effectiveness of the organization. This viewpoint has dominated much of the literature on how conflicts between marketing and other business functions affect overall business unit performance. Souder (1981), for example, found that conflicts between marketing and R&D were associated with a higher incidence of new product failure.

The other perspective argues that interdepartmental conflicts can have the positive effect of forcing each functional group to re-examine its assumptions and values. Consequently, conflict may increase the creativity and adaptability of the organization in responding to environmental

challenges, and thereby increase the long-run performance of the organization.

We suspect that both of the above views have some merit, but that each holds true for business units pursuing different types of strategy. In other words, the impact of conflict on a business's performance is likely to be contingent upon three inter-related factors as shown in Figure 1: (1) the nature of the environment the business faces, (2) its strategy, and (3) the types of organizational structures and conflict resolution mechanisms it employs.

The outcomes of interdepartmental conflict under different business strategies

Research on the relationships between a business unit's strategy and its resulting performance suggests that prospectors and defenders are likely to perform best on different dimensions. Defenders often outperform prospector business units in terms of return on investment and cash flow, whereas prospectors may achieve better results in terms of market share gains (Hambrick, 1983). Such performance measures, however, are relatively global and reflect the impact of a large number of variables beyond the interactions between marketing and R&D. The outcomes of interdepartmental interactions are more likely to impact directly on the attitudes of the individuals involved and on the short-run effectiveness of their departments. At this individual level, two types of outcomes seem particularly relevant: (1) the attitudes of the members of the affected departments concerning how well their conflicts are being resolved—i.e. their satisfaction with the efficiency and effectiveness of the conflict resolution mechanisms being employed; and (2) the resulting effectiveness of the department's performance on those tasks and objectives where it is dependent on workflow or resource inputs from the other functional area.

We hypothesize that, just as the amount of interfunctional conflict and the kinds of organizational structures employed vary across business units pursuing different strategies, the participants attitudes toward how well conflicts are resolved will also vary. Since prospector businesses have a relatively high potential for conflict, and are more likely to rely on lengthy participative processes to resolve them, we suspect that employees in such businesses will have comparatively negative attitudes toward

the effectiveness and efficiency of the conflict resolution processes being used. Defender businesses, on the other hand, have less potential for conflict and rely on prescribed rules or top management judgements to resolve them. Employees are not only likely to view such processes as relatively efficient, but they may also see them as effective since they can help prevent minor conflicts from escalating.

P5: *Personnel in prospector business units have less positive attitudes concerning how well interdepartmental conflicts are resolved than do employees of analyzer or defender business units.*

Ideally, the impact of interactions with other functional areas on a department's task performance should be studied and analyzed objectively. Unfortunately, objective criteria for measuring departmental performance on specific tasks are both difficult to specify and are likely to be influenced by a variety of factors other than interactions with another functional area. Consequently, the convention followed by most studies of interdepartmental relations (cf. Van de Ven and Ferry, 1980) is to measure the perceptions of the members of one department concerning the effectiveness of their relations with another functional department. For many of the same reasons discussed above (i.e. more ambiguous environments, higher levels of conflict, less efficient organizational structures, etc.) we expect personnel in prospector businesses to have less favorable perceptions of the effectiveness of their interactions with other departments than people in either analyzer or defender businesses.

P6: *The perceived effectiveness of the interaction between marketing and R&D is lower in prospector business units than in analyzer or defender businesses.*

AN EXPLORATORY STUDY

The above propositions were examined with data drawn from three divisions of a *Fortune* 500 industrial products manufacturer. Each division had separate marketing and R&D departments and operated in different industries.

While previous studies of the implementation and performance of business strategies have

employed cross-sectional methods involving large numbers of business units, we chose to pursue an in-depth investigation of a large number of respondents drawn from a small number of units. This approach was deemed most appropriate in view of the propositions being explored. Since interactions between marketing and R&D personnel may vary considerably from individual to individual—especially given the diversity of marketing positions across various levels of the management hierarchy within the typical business unit—key informant reports have the potential of providing misleading insights concerning interaction between these two functional areas.

Selection of the business units

The three business units examined in this study were selected because they all had track records of solid performance in the marketplace and because each was pursuing one of the three different viable strategies identified by Miles and Snow; prospector, analyzer and defender. Our identification of each business's strategy was based on an analysis of the unit's products, market position, strategic goals and actual performance. The information used to form our judgements was obtained from the marketing director of each business unit. A brief description of each the three business units is summarized in Appendix 1.

In order to check the reliability of our selection and classification of business units, Miles and Snow's descriptions of the four generic strategies in their typology were given to two corporate staff members of the firm in question. Those individuals were asked to independently categorize each of the three chosen business units according to the descriptions provided. The classification provided by both of these independent judges were in perfect agreement with our own.

Respondents

Information concerning interactions between marketing and R&D departments was obtained through written questionnaires distributed to every individual employed in marketing management, sales management or staff marketing positions within the three business units. Respondents were asked to provide information concerning the level of conflict they experience with R&D, how those conflicts are resolved, the

effectiveness of the resolution methods being used, and the overall effectiveness of their relationship with the R&D function within the business unit. A small sample of personnel from R&D were also asked to provide information in the marketing–R&D interface from their viewpoint. These respondents were identified by the marketing director of each division.

Measures

Both marketing and R&D personnel included in the study were asked to provide information about their interaction with R&D personnel through open-ended and forced-choice questions. The open-ended questions focused on the nature of conflicts or disagreements between the two departments and on possible ways the interaction could be improved.

The forced-choice measures used in this study were adapted from those developed by Van de Ven and Ferry (1980) in their organizational assessment paradigm. While the original measures were developed to study interactions between autonomous organizations, they have been shown to possess reasonable levels of reliability across a variety of different organizational levels and settings.

The *level of conflict* between marketing and R&D was measured by a three-item five-point scale which asked respondents how frequently they disagree with personnel from R&D over (1) the goals and priorities of the business unit; (2) the specific ways work is done or services are provided between the departments; and (3) the specific terms of the relationship between marketing and R&D. The *formalization* measure used a four-item five-point scale which asked respondents to judge the extent to which their relationship with R&D (1) was explicitly verbalized, (2) was written down in detail, (3) used standard operating procedures such as rules, policies and forms, and (4) followed formal communication channels. The *conflict resolution* measure asked respondents to indicate how frequently on a five-point scale conflicts are resolved by (1) ignoring or avoiding the issue, (2) smoothing over the issue, (3) working out a compromise between the parties involved, and (4) passing the conflict to higher-level managers or authorities for resolution.

A single-item scale was used to measure the respondents' attitudes toward *how well conflicts*

are resolved. This item used a five-point scale ranging from very poorly to very well. The *perceived effectiveness of the relationship* between the marketing and R&D departments was assessed through six five-point items which explored the respondent's perceptions concerning the overall effectiveness of the relationship, the extent to which the relationship is satisfying and productive, and the extent to which each side carries out its responsibilities.

Response rates

Questionnaires were sent to 114 marketing and sales personnel. A total of 95 usable questionnaires were returned, producing a response rate of 83 percent. No significant differences were found in response rates across the three divisions or across the position of the respondent.

A smaller sample of R&D personnel was also used to examine the marketing-R&D interface. A total of 21 usable questionnaires from R&D personnel were returned out of a sample of 40. Unfortunately, the prospector division produced significantly fewer responses than the other two business units. Given the small sample sizes and the lack of representativeness of the respondents, our discussion of these results is limited to the open-ended questions.

Reliability

Since multi-item scales were used to assess the level of conflict and the perceived effectiveness of marketing's interaction with other functional areas within the business unit, the reliability of those measures was assessed by calculating coefficient alpha. The resulting estimates of the reliability of the 'amount of conflict' measure, the 'perceived effectiveness' measure, and the 'formalization' measure were 0.83, 0.87 and 0.79, respectively. These levels of alpha exceed the minimums suggested by Nunnally (1978).

RESULTS

Open-ended questions

The open-ended questions concerning the kinds of disagreements and conflicts between marketing and R&D personnel provide some insight into the interaction between the two departments.

While strong conclusions are impossible to draw from this kind of data, several interesting observations can be made.

First, marketing personnel report that disagreements arise over a relatively small number of different issues. The most frequently cited problems reported in our sample of marketing personnel were: (1) a perceived lack of customer orientation or knowledge among R&D personnel, (2) slow responses to requests for help, (3) a failure to provide needed information and service support, and (4) unclear definitions of goals, objectives and functional responsibilities across the two departments. These areas of disagreement are similar to the kinds of problems that have been reported in other studies of marketing-R&D interactions (Souder, 1981; Wienrauch and Anderson, 1982). Some of the respondents' specific comments concerning these areas of conflict are shown in Appendix 2.

A second finding from the open-ended questions suggests that the marketing personnel in the prospector business unit experienced more conflict with R&D than their counterparts in the defender unit. Fifteen of the 31 respondents from the defender unit reported that they had no or few real problems in their dealings with the R&D staff, while only six of the 33 respondents from the prospector unit provided this response. In addition, the comments from respondents in the prospector unit seemed more intense and critical than those from respondents in the defender unit.

Our sample of R&D personnel also shows that conflicts center on only a few issues and, in addition, these issues are remarkably similar to those voiced by marketing. The three main issues which surfaced in their open-ended responses were: (1) marketing personnel are too quick in their response to the market-place; (2) the marketing department is unable to provide the kinds of support that R&D needs; and (3) R&D departments and marketing lack clearly defined new product development goals, objectives and functional responsibilities. Each of these issues was also cited by the marketing respondents. Appendix 3 shows some of the specific responses from R&D personnel concerning these three areas of conflict.

Levels of conflict under different strategies

Data from the forced-choice items on the questionnaire are displayed in Table 1. They

indicate that marketing personnel in the prospector business unit experienced significantly more conflict in their relationships with R&D than those in either the defender or analyzer business unit. This finding is consistent with the prediction made in Proposition 1. Surprisingly, members of the defender SBU reported slightly higher conflict than those in the analyzer unit, but this difference was not statistically significant.

In order to further explore variations in the amount of conflict reported between marketing and R&D, perceived conflict was also examined across respondents occupying different marketing positions in each of the three business units. This comparison is shown in Table 2. Respondents were classified as either line marketing personnel, sales managers, or staff marketing personnel. Line marketing personnel included the top-level marketing managers within the business unit along with product and market managers with specific line responsibilities. Sales managers represented personnel in charge of the sales force and ranged in title from regional sales managers to the director of sales. Staff marketing personnel included people in support positions, such as marketing research, advertising, and sales promotion.

A two-way analysis of variance again showed significant differences across the three divisions, but the effect of the position of the respondent

was not significant. It is interesting to note, however, that the interaction effect between respondent's position and the business unit's strategy was significant. Within the prospector division line marketing personnel and sales managers reported higher levels of conflict than did staff marketing personnel, while the opposite was true in the defender business unit. While one possible reason for these differences in reported levels of conflict is mentioned later in the discussion section of this paper, the finding itself serves to underscore the importance of collecting data from multiple levels of the organization when studying interfunctional relationships.

Organizational structures and conflict resolution mechanisms under different strategies

Our second proposition stated that the degree of formalization of marketing's relationship with R&D personnel should be high under a defender strategy and lowest under a prospector strategy. The results of our test of this proposition shown in Table 1 fail to support this proposition when the three business units are considered simultaneously. The defender business unit did report the highest level of formalization but the prospector and analyzer units reported very similar levels of formalization. Individual *t*-tests

Table 1. Differences in level of conflict, conflict resolution mechanisms and perceived effectiveness of interdepartmental relations across business unit strategies

Variable	Prospector	Analyzer	Defender	<i>F</i>	Significance
<i>Frequency of conflicts</i>					
1. Over goals and priorities	2.91	2.45	2.81	2.57	0.08
2. Over specific ways work is provided	3.12	2.48	2.58	3.78	0.03
3. Over specific terms of the relationship	3.18	2.51	2.65	5.62	0.00
4. Overall frequency of conflict	9.21	7.45	8.03	4.82	0.01
<i>Formalization of the relationship</i>	9.61	9.55	10.36	0.51	0.60
<i>Reported use of conflict resolution mechanisms</i>					
1. Avoidance	1.97	1.32	1.39	5.98	0.00
2. Conciliation	2.27	1.84	1.68	2.39	0.09
3. Participatory	3.42	3.87	3.13	2.47	0.09
4. Hierarchical	2.52	1.81	2.10	4.08	0.02
<i>Perceived effectiveness of conflict resolution</i>	3.15	4.16	4.10	13.73	0.00
<i>Perceived effectiveness of marketing's relationship with R&D</i>	20.79	23.26	21.94	22.09	0.12

Table 2. Level of conflict under different business unit strategies by position of respondent

Position of respondent	Prospector	Analyzer	Defender
Line marketing	10.00	7.22	7.00
Sales managers	9.12	7.56	8.27
Staff marketing	6.33	7.54	9.17
Total	9.21	7.45	8.03

Analysis of variance

Main effects	<i>F</i>	Significance
Strategy	4.50	0.01
Respondent's position	0.04	NS
Two-way interactions	2.56	0.04

of the differences in mean level of formalization confirmed that the defender business unit is not significantly higher in formalization than either the prospector or analyzer units.

A two-way analysis of variance was also used to examine differences in formalization by strategy as well as the position of the respondent. This comparison is shown in Table 3. While the strategy being followed failed to produce a significant effect, the position of the respondent did produce different levels of formalization. Line marketing personnel reported the highest level of formalization while staff marketing personnel produced the lowest.

Propositions 3 and 4 suggested that the use of specific conflict resolution mechanisms should vary according to the type of strategy being pursued by the business unit. Table 1 displays the findings pertinent to these propositions. These findings show that Proposition 3, which hypothesized that defender business units would rely more heavily on hierarchical modes of conflict resolution than units pursuing other strategies, was not supported. Respondents in the prospector business unit reported more frequent use of hierarchical mechanisms than those in the defender unit, and the difference was statistically significant.

Proposition 4, which predicted that the prospector business unit would rely more heavily on avoidance, conciliatory and participative conflict resolution mechanisms than units with different strategies, was partially supported. While the

prospector division did have the highest reported use of avoidance and conciliatory modes, only the difference in the use of avoidance was statistically significant across the three divisions. Also, contrary to predictions, the analyzer division produced the highest reported use of participatory methods for resolving conflicts.

The outcomes of conflict under different strategies

Proposition 5 stated that personnel in prospector business units will have less favorable attitudes concerning how well interdepartmental conflicts are resolved due to both the higher level of conflict inherent in such business units and to the expected greater reliance on non-hierarchical mechanisms of conflict resolution. The data in Table 1 support this proposition.

For similar reasons Proposition 6 predicted that personnel in prospector business units would perceive the relationship between marketing and R&D to be less effective than personnel in business units pursuing either defender or analyzer strategies. As predicted, the prospector business unit did produce the lowest total score on the six-item effectiveness measure, while the analyzer SBU produced the highest score, but these differences were not significantly significant. However, individual *t*-tests of the differences in means did show that perceptions of effectiveness in the prospector unit were significantly lower

Table 3. Level of formalization under different business unit strategies by position of respondent

Position of respondent	Prospector	Analyzer	Defender
Line marketing	10.15	10.11	12.80
Sales managers	9.59	10.33	9.33
Staff marketing	7.33	8.62	8.83
Total	9.61	9.55	10.36

Analysis of variance

Main effects	<i>F</i>	Significance
Strategy	0.63	NS
Respondent's position	3.57	0.03
Two-way interaction	0.94	NS

than in either the analyzer or the defender business units.

Interactions between organizational structures and conflict outcomes

Since the expected relationships between a business unit's strategy and the kinds of organizational structures used to manage and resolve interdepartmental conflicts were not found in this sample of respondents, much of the rationale for Propositions 5 and 6 was compromised. Nevertheless, it still seems reasonable to think that the manner in which such conflicts are managed by the organization affects the participants' perceptions of the effectiveness of their relationships with other departments. Consequently, in order to further examine this issue, the results of a correlation analysis between the level of conflict, the degree of formalization and the resolution methods used, and the perceived effectiveness of the relationship between marketing and R&D are displayed in Table 4.

The results of this analysis show that the level of formalization is significantly positively related to the perceived effectiveness of interdepartmental relations and significantly negatively related to the level of conflict between the two departments when examined across all respondents. When each business unit is viewed independently, the significant positive relationship between formalization and effectiveness holds in each case. The relationship between formalization and conflict

remains negative when each business unit is examined independently; however, due to relatively small sample sizes, they are not significant at the 0.05 level.

The results of this analysis also show that the frequency with which different conflict resolution mechanisms are used is related both to the level of conflict and to the perceived effectiveness of the interaction between marketing and R&D departments, but that the strength of these relationships varies across business units with different strategies. The use of participatory conflict resolution mechanisms was negatively correlated with the level of conflict and positively correlated with the perceived effectiveness of the relationship between marketing and R&D. These relationships were particularly strong in the prospector and analyzer business units, but they were not statistically significant in the defender unit. On the other hand, hierarchical resolution mechanisms were related to higher levels of conflict but less perceived effectiveness in the prospector business unit, although these relationships were not found in either the analyzer or defender businesses.

DISCUSSION AND IMPLICATIONS

Limitations

Since this study represents an initial attempt to examine how marketing's interaction with R&D is influenced by the strategy being pursued by

Table 4: Correlations among level of conflict, conflict resolution methods and perceived effectiveness of interfunctional relations across business strategies

Variable	All respondents		Prospector business unit		Analyzer business unit		Defender business unit	
	Level of conflict	Perceived effectiveness	Level of conflict	Perceived effectiveness	Level of conflict	Perceived effectiveness	Level of conflict	Perceived effectiveness
Level of conflict	—	−0.48*	—	0.55*	—	−0.34*	—	−0.43*
Perceived effectiveness of interfunctional relationship	−0.48*	—	−0.55*	—	−0.34*	—	−0.43*	—
Formalization	−0.18*	0.52*	−0.22	0.42*	−0.02	0.36*	−0.24	0.67*
Conflict resolution mechanisms								
Avoidance	0.26*	−0.25*	0.29*	−0.53*	0.29*	−0.21	−0.06	0.15
Conciliatory	0.06	0.07	0.26	0.01	0.06	0.06	−0.27	0.21
Participatory	−0.36*	0.47*	−0.40*	0.74*	−0.42*	0.59*	−0.29	0.22
Hierarchical	0.32*	−0.18*	0.54*	−0.22	0.07	0.04	0.10	−0.15
Effectiveness of conflict resolution	−0.43*	0.41*	−0.46*	0.70*	−0.33*	−0.46*	−0.24	0.06

* Significant at the $p < 0.05$ level.

the business unit, the results presented here should be treated with caution for several reasons. First, only three business units within a single firm were studied. While this single firm context was useful for controlling factors that may have added extraneous variance to the study, and for enabling data to be collected from multiple respondents in each business, it restricts the generalizability of the results. Future research should determine whether business units within other corporate environments experience similar levels of conflict and rely on similar conflict resolution mechanisms as those reported here.

A second limitation of this study is its reliance on the perceptions of only marketing employees in the statistical tests of the propositions. While there is some evidence that perceptions about the structural form of relationships across organizational boundaries are reliable when obtained from a constrained sample of informants, there is also evidence to suggest that evaluative judgements drawn from such respondents may not be very reliable (John and Reve, 1982). Therefore, it would be useful to compare the perceptions of marketers with the perceptions of personnel from the R&D function as a test of the reliability of these results.

A third limitation of this research is its inability to answer questions of cause and effect. While

we have been careful to avoid suggesting that a given variable 'causes' another, it is tempting to infer that such relationships exist from the correlations presented above. Also, a better understanding of causal direction might provide more insights of use to managers in influencing the interaction between marketing and R&D departments. In order to test the direction of causal relationships, therefore, future studies should utilize longitudinal research designs.

Finally, the usefulness of this study may also be limited somewhat by its reliance on perceptual measures of the effectiveness of interfunctional interaction. A key question which remains unanswered is whether the 'perceived effectiveness' of the interaction between marketing and R&D is systematically related to other performance variables, such as the number of new products a business develops, the success of those new products in the marketplace, or the amount of time and resources required to develop new products. Given the individual level of analysis used to test the propositions in this study, this question is impossible to answer because such performance outcomes reflect the efforts of many individuals and variables other than those directly involved in the interaction between marketing and R&D.

Level of conflict

Despite its limitations, this study does provide some support for the notion that business units pursuing different types of strategy are likely to experience different amounts of conflict between marketing and R&D departments. Specifically, we found that the prospector business unit experienced the most frequent disagreements between marketing and R&D personnel. Somewhat surprisingly, the analyzer business unit reported the lowest level of conflicts—lower even than the defender business unit with its minimal level of new product development activity.

Significant differences were also observed in the amount of conflict reported by marketing personnel at different organizational levels across businesses pursuing different strategies. For the prospector unit the frequency of conflict was highest among the line marketing and sales managers, with very low levels of conflict being reported by staff marketing personnel. The opposite result was observed in the defender business unit. One possible explanation for this finding is that the strategy being pursued by the business unit impacts not only the overall level of conflict between marketing and R&D, but also the types of issues that are the focus of those conflicts. Since new product and market development are major objectives of prospector businesses, conflicts between marketing and R&D personnel are most likely to center around such crucial strategic issues as the mission of the business, the dimensions on which it will seek a competitive advantage, and the value that potential customers are likely to attach to different product attributes in making future purchase decisions. Conflicts over such issues are most likely to be thrashed out at relatively high levels of the organization. On the other hand, conflicts within defender businesses may be more narrowly focused on minor issues concerning modifications of existing products, line extensions, and production process improvements. The resolution of such 'operational' conflicts may be waged more often by relatively low-level staff personnel.

Organizational structures

One of the more interesting findings of this exploratory study is that the organizational structures used to manage and resolve conflicts between marketing and R&D do not appear to

vary significantly across business units pursuing different generic strategies. The level of formalization was found to be highest in the defender business unit, as predicted by the Miles and Snow typology, but not at a statistically significant level.

With one exception, the prospector business unit reported greater use of all four methods of conflict resolution than the analyzer and defender units. This included greater use of hierarchical conflict resolution mechanisms, even though we expected such methods to be more widely used by businesses pursuing defender strategies. One obvious explanation for this finding is that the greater frequency of conflicts in prospector businesses leads to greater use of all forms of conflict resolution. Another possibility—one that may be worthy of further research—is that hierarchical mechanisms serve as the 'method of last resort' for resolving major interdepartmental conflicts after all other approaches fail. Since the prospector business unit did experience more conflicts involving higher levels of management than either of the other two units, marketing and R&D personnel may have felt pressured to 'kick upstairs' more conflicts in order to secure quicker decisions, and decisions that would be strategically acceptable to top-level management.

Conflict and its aftermath

The results of this preliminary study also suggest that the frequency of conflicts, and the methods used to manage and resolve them, do impact marketers' perceptions of the effectiveness of their interactions with R&D personnel. Formalization of the interaction between the two units was found to be positively related to the perceived effectiveness of interfunctional interaction and negatively related to the level of conflicts. The use of rules and standard operating procedures appears to reduce confusion over individual roles, and thus foster more productive interdepartmental interaction across all three different types of business unit strategy.

Differences across business unit strategies were found, however, in the relationship between alternative conflict resolution mechanisms and the effectiveness of interdepartmental interaction. In the prospector business unit, both the use of participatory conflict resolution mechanisms and the perception that conflicts are being adequately resolved were positively related to perceptions

of effective working relations between marketing and R&D. In the defender business unit, on the other hand, those same correlations were insignificant.

One possible explanation for these results rests on the difference in frequency of conflicts between prospector and defender business units. Since the defender reported less conflict, the method and effectiveness of conflict resolution may not be viewed as an important determinant of the effectiveness of the interaction with R&D. In a more conflictual environment, especially where the conflicts are more serious, such issues take on more importance in determining the outcomes of the relationship between the two departments. While the limitations of this study make us reluctant to draw 'cause-and-effect' conclusions, these data do seem to suggest that participatory conflict resolution mechanisms may be time-consuming and inefficient when applied in 'high-conflict' strategic environments, but that they may ultimately lead to more creative and effective joint outcomes from interdepartmental relationships. At the very least this is an issue that deserves further investigation, since it may help differentiate successful marketing-R&D partnerships from those that are less productive.

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APPENDIX 1: DESCRIPTIONS OF THREE BUSINESS UNITS IN THE EXPLORATORY STUDY

The Defender Business Unit

The business unit which was identified as pursuing a defender strategy was the oldest, largest and most profitable of the three units included in the study. This unit was created in the early 1960s

and had total sales of about \$200 million. While this unit produced many different products, its largest product accounted for 20 percent of the unit's sales and produced a gross margin of 55 percent. The top three products in the unit produced about 35 percent of the unit's sales at margins that averaged 46 percent of sales. While return on investment data for each division was not made available to us, sources within corporate management stated that this division is the most profitable of the three included in the study.

The stated mission of this business unit was to maintain the high level of profitability that the unit had achieved. New product development played a relatively minor role compared to the other divisions included in this research. Only two new products were developed in the 2 years before the study was conducted, and only 1 percent of the unit's sales was accounted for by those new products. Products within this division are evaluated primarily in terms of immediate financial performance. New products, for example, were reviewed in terms of market penetration, sales revenue and profitability.

The prospector business unit

The prospector business unit was established during the early 1970s and produced supplies and equipment for the health-care industry. This business unit produced over 300 different product items serving many different markets and applications. Since the health-care industry is undergoing some dramatic changes, environment faced by this unit was the most turbulent of the three included in the study. However, the business was a very profitable unit, producing margins on its top three products of about 40 percent of sales. Corporate sources suggest that this division is the least profitable of the three selected.

New product development played a central role in the strategic mission of this unit. Over the 2 years prior to this study, 20 new products were introduced, and those products accounted for 11 percent of the business unit's sales volume. Market acceptance was the dominant objective of the division while financial performance played a more secondary role. New products were evaluated by the level of customer awareness, product trial, repeat purchase and market penetration. Profitability was not cited as a primary measure of new product success by managers in this business unit.

The analyzer division

Analyzer business units share some of the characteristics of both prospectors and defenders making the identification of this business unit strategy more difficult. The analyzer unit included in this study was the smallest of the three divisions with sales of about \$56 million. The unit produced about 200 different product items. Sales of the largest products in this unit were less concentrated than in the defender unit, with sales of the top three products generating 19 percent of the unit's revenues.

The strategic mission of this unit focused on maintaining profitability as well as developing avenues for growth. New product development activity in this unit was more intense than in the defender business unit but less dramatic than in the prospector business unit. Fifteen new products were introduced in the 2 years before this study, and sales of those products accounted for about 4 percent of the unit's total revenues.

APPENDIX 2: MARKETERS' COMMENTS CONCERNING AREAS OF CONFLICT BETWEEN MARKETING AND R&D PERSONNEL

- (a) *R&D personnel lack a customer orientation:*
 - 'It's very difficult to relate the real world needs of price, quality and performance to the lab development people.'
 - 'Definition of customer needs is clouded by "we can't do this" or "it's too costly".'
 - 'R&D produces what they think the customer needs rather than listening to our customer's needs'
 - 'R&D lacks a customer perspective.'
- (b) *R&D personnel are not able to respond quickly enough to changes in the marketplace:*
 - 'Slow response times on critical projects.'
 - 'R&D personnel do not understand the pressures and needs of timely and rapid scale-ups.'
 - 'R&D doesn't include my unit in the development stage soon enough. We need more technical help in the field. It currently takes too long to receive help.'
 - 'Reaction time too slow and they have a tendency to cover up problems.'

- (c) *R&D departments are unable to provide the kind of support marketers need:*
 'Get little information from them.'
 'Lack of progress reports on new product development.'
 'Lack of information on problems.'
 'Lack of support after a new product has gone to market and needs some re-design.'
 'Not enough people to work on an increased number of business opportunities.'
- (d) *R&D departments and marketing lack clearly defined new product development goals, objectives and functional responsibilities:*
 'R&D sometimes spends too much time on products that have little impact on our business and spends too little time on improving present products or new worthwhile ones.'
 'A major problem is establishing proper priorities.'
 'Not knowing what or where their efforts are being channeled.'
 'Their goals seem to be somewhat counter to our goals and this sometimes can create conflicts due to a fuzzy definition of some responsibilities.'
 'Disagreements on new product format, timing of introduction, pricing, and marketing programs.'
 'Disagreements over new product, and therefore, business definition.'
 'Disagreement over the extent of each group's job function (e.g. the lab believes they can veto non-technical ad copy because they don't like the way it sounds).'
- (b) *Marketing department is unable to provide the kind of support R&D needs:*
 'We need more support for new business efforts for non-traditional markets.'
 'Marketing could do a better job finding and describing customer needs which are not being met by current products and finding applications for new technologies.'
 'We need adequate sales and marketing forecasts as they affect planning for long-delivery capital equipment.'
 'Marketing productivity is generally low in terms of generating new information and data.'
- (c) *R&D departments and marketing lack clearly defined new product development goals, objectives and functional responsibilities:*
 'We have difficulty in setting long range strategies and goals.'
 'We have differences in priorities and resources.'
 'The main problems we face are personality conflicts, inconsistency of goals, and differences in time allocation to various programs.'
 'We disagree over resources dedicated to new products both domestically and internationally.'
 'Responsibilities of this department are not understood by marketing.'
 'Our services and the quality of those services are not understood or appreciated.'
- (a) *Marketing personnel are too quick in their response to the marketplace:*

**APPENDIX 3: R&D'S COMMENTS
 CONCERNING AREAS OF CONFLICT
 BETWEEN MARKETING AND R&D**