ORGANIZING TO ATTAIN POTENTIAL BENEFITS FROM INFORMATION ASYMMETRIES AND ECONOMIES OF SCOPE IN RELATED DIVERSIFIED FIRMS

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Diversified firms can obtain benefits from information asymmetries and economies of scope. Each source of benefits is based on different underlying mechanisms. Attaining benefits relies on the adoption of appropriate organization structures and processes, which should be designed on the basis of the organizational requirements of each source of benefits.

Related diversified firms can benefit from information asymmetries between buyers and sellers and from economies of scope. Benefits from information asymmetry arise when buyers purchase multiple products from a firm (Heskett, 1986; Nayyar, 1990; Normann, 1984). In this case, businesses are related because they share buyers. Benefits from economies of scope arise when a firm produces two or more products (Panzar & Willig, 1981; Teece, 1980). In this case, businesses are related because they share productive resources. Benefits from information asymmetries and economies of scope are believed to be the prime driver behind related diversification strategies. "Yet . . . those particular benefits show an almost unshakable resolve not to appear when it becomes time for their release" (Reed & Luffman, 1986).

Appropriate organization designs are needed to achieve the potential benefits offered by information asymmetries and economies of scope. Organizational design variations required to attain potential benefits from these two sources have, however, received almost no research attention (see Gupta & Govindarajan, 1986, for an exception), although management of diversified firms has been extensively researched (Galbraith & Kazanjian, 1986; Ramamujam & Varadarajan, 1989). Because competitive advantage can arise from effective organization design (Hansen & Wernerfelt, 1989; Powell, 1992), it is necessary to examine ways to organize firms that want to attain benefits from information asymmetries and economies of scope.
Diversification in a firm leads to the adoption of a multidivisional structure (M-form) (Chandler, 1962; Channon, 1973, 1978; Rumelt, 1974), and the adoption of the M-form structure (Williamson, 1975) results in greater economic efficiency for the organization (Armour & Teece, 1978; Rumelt, 1974; Teece, 1981). The appropriateness of the M-form structure and its variations across related and unrelated diversified firms has been examined (e.g., Chandler, 1962; Rumelt, 1974). However, variations in the multidivisional organization design (structure, systems, and processes), which are contingent on the source of benefits in a related diversified firm, have not been studied. It is necessary to study such variations because benefits from information asymmetries and economies of scope are based on different underlying mechanisms, which require different organizational structures and processes.

Chandler (1962) wrote that "the activities of many large American enterprises should become still more diverse and still more complicated. And so, in order to meet the new needs and opportunities, these companies will undoubtedly adopt some variation of this multidivisional structure" (1962: 49, emphasis added). He acknowledged, however, that even his monumental work "only here and there . . . suggest[s] the important variations in the multidivisional structure" (1962: 362).

Lawrence and Lorsch (1967) also expected subsystems in any effective organization to be internally differentiated and integrated in response to varying demands of corresponding subenvironments. Thus, if the production subsystem faced a differentiated subenvironment, then its internal structure would also be differentiated, but the marketing subsystem would not be. This argument suggests that "location" of structural differentiation within an organization depends upon which subenvironment is differentiated. Because benefits from information asymmetries and economies of scope in related diversified firms create different task environments, it follows that these differences should be matched by requisite structural differentiation. Further, this structural differentiation requires appropriate integrative mechanisms to coordinate the activities of the different organizational units.

In this article, we explore variations in organization designs for related diversified firms. First, we describe how related diversified firms can potentially benefit from information asymmetries and economies of scope. Second, we briefly review the vast literature on organization designs for diversified firms. This review reveals few suggestions on how firms should try to capture the potential benefits of related diversification. Third, we show how organization structure and processes should be designed to realize potential benefits from information asymmetries and economies of scope. We propose organization structures and processes that are most likely to promote the operation of underlying benefits-generating mechanisms. We conclude with a brief discussion of the implications of our analysis.
TWO SOURCES OF POTENTIAL BENEFITS FOR RELATED DIVERSIFIED FIRMS

Benefits From Information Asymmetries

Before making a purchase, buyers need to know the prices and quality of the various products or services they are considering. Service quality, however, is difficult to evaluate because of its intangible nature and its simultaneous production and consumption (Holmstrom, 1985; Mills, 1986). This difficulty complicates the decisions of potential buyers. Hence, buyers seek information to make better choices (Stigler, 1961). Generally, sellers have greater information than buyers do about the quality of their products. In such instances, buyers cannot reliably determine product quality.

Buyers attempt to resolve such problems by favoring their current providers (with whom they are satisfied) when evaluating alternative providers of other products they need. Diversified firms may, therefore, exploit such incentives by meeting multiple needs of existing satisfied buyers because this strategy yields a competitive advantage (Nayyar, 1990). This advantage is generally sustainable because it is based on reputation effects, which are difficult and costly to imitate (Barney, 1986; Dierickx & Cool, 1989).

If a firm is seeking benefits from information asymmetries, new products should not adversely affect existing products (Heskett, 1986; Nayyar, 1990; Normann, 1984). For instance, the perceived quality of one service may be affected by the quality of another service. Also, meeting multiple needs of buyers offers cross-selling and feedback-seeking opportunities. Effective cross-selling requires products to be appropriately designed for each market segment (Heskett, 1986; Normann, 1984). In addition, it requires employees to be adequately informed about other products their firm offers, about when and how cross-selling should be attempted, and about how to discern whether a particular buyer may be interested in other products. Similarly, any feedback obtained from buyers must be channeled appropriately so that it may be acted upon. In some cases, feedback may even require an immediate response from an employee.

Firms with favorable reputations may benefit from the presence of information asymmetries in many situations. For example, public accounting firms often provide management consulting services to buyers of their auditing services. Buyers readily transfer their impressions of the quality of the accounting services to the firm’s consulting services because the quality of such services is difficult to evaluate before purchase. Other examples are American Express, which provides financial services to buyers of its travel-related services; Humana, Inc., which offers health insurance and runs hospitals; and legal services firms that offer financial services to their clients.

Although Nayyar (1990) suggested information asymmetries as a
source of competitive advantage mainly for diversified service firms, goods-producing firms could also benefit from information asymmetries. This is because the quality of some goods, such as complex, one-of-a-kind machinery, is also extremely difficult to evaluate before use. The extent of information-asymmetry benefits depends on the mix of search, experience, and credence qualities of a product. Buyers can determine search qualities such as color, style, price, fit, feel, hardness, and smell prior to purchase. However, they can determine experience qualities such as taste, purchase satisfaction, convenience, safety, security, speed, reliability, level of comfort, and a seller's attention to the needs and feelings of buyers only after purchase. And buyers may be unable to determine credence qualities such as the degree of service providers' professionalism and knowledge and the advantages of certain repair or medical care procedures even after purchase (Darby & Karni, 1973; Holmstrom, 1985; Nayyar, 1990; Wilde, 1981; Zeithaml, 1981).

On a continuum covering search, experience, and credence qualities, most goods lie toward the search end, whereas most services lie toward the credence end. As Nayyar (1990) noted, potential benefits from information asymmetries are likely to be greater for products high on experience and credence qualities than for products high on search qualities.

Benefits from Economies of Scope

Economies of scope arise when the joint cost of producing two or more outputs, including all costs incurred from transforming raw materials to delivering the final products to buyers, is less than the sum of the costs of producing each output by itself. Such cost benefits may arise when businesses share markets, distribution systems, product and process technologies, or manufacturing facilities (Rumelt, 1974; Teece, 1980). If transaction costs prevent an efficient market for a shared production factor, economies of scope provide a motive for diversification because they reduce the joint costs of producing multiple outputs (Panzar & Willig, 1981; Teece, 1980).

If factors of production are shared across two or more products, the demands each product places on a shared factor must be coordinated. For instance, simultaneous use of a shared production factor may be precluded due to capacity constraints. If each product has seasonal and cyclical demands on a shared production factor, scheduling may be necessary to obtain a smooth total demand for the factor. Shared production factors may also constrain the design choices for each product because product design changes often result in the reconfiguration of production factors. If a business reduces or eliminates its use of a shared factor, costs of another business using that factor may increase.

Diversified firms may obtain economies of scope in many different ways. For example, firms in the hotel business may leverage their expertise in meeting travelers' boarding and lodging needs to provide similar services to hospital and nursing home patients. Examples of other firms
that derive benefits from economies of scope are ARA Services, which uses its vast fleet-maintenance facilities to offer municipal transport maintenance; Delta Airlines, which services other airlines’ aircraft using its many maintenance facilities; and Philip Morris, which uses a common marketing services organization and shared distribution arrangements for its different businesses.

**DIVERSIFICATION AND ORGANIZATION DESIGN: A BRIEF REVIEW**

Although synergy has often been postulated as a motive for related diversification, the potential for synergy does not imply that synergy will actually be realized (Chandler, 1962; Kazanjian & Drazin, 1987; Salter & Weinhold, 1979). Obtaining benefits from relatedness among businesses, whether due to information asymmetries or economies of scope, requires establishing operating relationships among organizational units in related diversified firms. Such relationships are problematic and costly (Carman & Langeard, 1980; Kanter, 1989). In fact, Reed and Luffman (1986) and Kanter (1989) suggested that firms often forego potential benefits of related diversification when they are likely to incur substantial implementation costs. Lubatkin (1983) and Haspeslagh and Jemison (1991) also cautioned that administrative problems could cancel merger benefits.

For example, increasing evidence indicates that acquisitions do not consistently yield desired financial returns (Jensen & Ruback, 1983; Lubatkin, 1983). Such findings have motivated researchers to investigate this deviation between realized benefits and expected benefits (Buono & Bowditch, 1989; Chatterjee, Lubatkin, Schweigers, & Weber, 1992; Haspeslagh & Jemison, 1991). These authors argued that both the negotiations preceding the acquisitions and the integration processes following the acquisitions will determine the success of the business combinations. These studies concluded that firms expend resources to achieve relatedness benefits. However, although the importance of pursuing synergies seems to have been established, few suggestions have been offered on how firms should capture potential benefits from different sources.

Thus, the performance of related diversified firms depends not only on whether or not there are potential benefits to be obtained but also on implementation difficulties associated with each source of benefits. Firms must pay attention to how potential benefits will be achieved, the likelihood of achieving these benefits, and the organization designs necessary to maximize the benefits and minimize the organizational cost (Buono & Bowditch, 1989; Chandler, 1962; Haspeslagh & Jemison, 1991).

Consistent with this view, we propose that an organization design that supports the firm’s pursuit of benefits resulting from information asymmetry is likely to differ from the organization design that supports the firm’s pursuit of benefits resulting from economies of scope. Hence, we expect to see variations in the organization designs of successful firms that pursue each of these sources of benefits.
ORGANIZATION STRUCTURE AND PROCESSES TO ATTAIN POTENTIAL BENEFITS IN RELATED DIVERSIFIED FIRMS

Organization Structure

Structure is defined "as the segmentation of work into roles such as production, finance, marketing, and so on; the recombinig of roles into departments or divisions around functions, products, regions, or markets; and the distribution of power across this role structure" (Galbraith & Kazanjian, 1988: 6). When a firm diversifies its product lines, it generally adopts a multidivisional form. Such diversification leads to the creation of divisions corresponding with each distinct product line, so that internal transaction costs are minimized (Jones & Hill, 1988). Divisions are self-contained; generally organized around businesses, products, brands, or geographic lines; and responsible for profits or some other performance measure (Hill & Hoskisson, 1987; Hoskisson & Hitt, 1988; Williamson, 1975). But how should divisions be formed when there is interdependence among products?

For a firm offering two independent products, P1 and P2, each sold to different sets of buyers, B1 and B2, and each produced from different sets of resources, R1 and R2 (depicted in the value chain shown in panel A of Figure 1), forming divisions is relatively simple. As long as there is no

### FIGURE 1

Value Chains Depicting the Pursuit of Benefits from Information Asymmetries and Economies of Scope

<table>
<thead>
<tr>
<th>RESOURCE</th>
<th>PRODUCT</th>
<th>BUYER</th>
<th>EXAMPLES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. No commonality between products</strong></td>
<td>R1</td>
<td>P1</td>
<td>B1</td>
</tr>
<tr>
<td></td>
<td>R2</td>
<td>P2</td>
<td>B2</td>
</tr>
<tr>
<td><strong>B. Common buyers between products</strong></td>
<td>R1</td>
<td>P1</td>
<td>B1</td>
</tr>
<tr>
<td></td>
<td>R2</td>
<td>P2</td>
<td>B2</td>
</tr>
<tr>
<td><strong>C. Shared resources between products</strong></td>
<td>R1</td>
<td>P1</td>
<td>B1</td>
</tr>
<tr>
<td></td>
<td>R2</td>
<td>P2</td>
<td>B2</td>
</tr>
<tr>
<td><strong>D. Shared resources and common buyers between products</strong></td>
<td>R1</td>
<td>P1</td>
<td>B1</td>
</tr>
<tr>
<td></td>
<td>R2</td>
<td>P2</td>
<td>B2</td>
</tr>
</tbody>
</table>

ITT: Hotels & telecommunications equipment.

American Express: Financial services & travel services.

Philip Morris: Several businesses share marketing services.

Philip Morris: Food products have common buyers and share distribution.
adopted the coordination-cost approach to assess the relationships between different corporate strategies and organization structure. Based on Thompson (1967), they posited that organization structure is chosen to minimize coordination costs among organizational units. They assumed that organizational coordination cost is a linear function of the number of links or interactions between units in an organization (i.e., where a link represents either the horizontal or vertical interaction between two units of an organization). Both approaches seek to minimize transactional or coordination difficulties between organizational units by reducing, to the extent possible, the need for coordination. The need for coordination is a function of the relationships required between organizational units to successfully attain particular benefits.

The coordination-cost approach to organization design is based on the premise that organizations are structured to facilitate the pursuit of business objectives with minimum coordination costs. The primary organizing rationale must be the achievement of business objectives. Otherwise, the minimization of coordination costs may lead to unacceptable compromises such as avoiding coordination altogether. Thus, organization design is best viewed as a constrained optimization problem, in which the objective function may be specified as the minimization of coordination costs, and in which a set of constraints specifies the organizational linkages needed to achieve different organizational objectives such as benefits from information asymmetries and economies of scope.

The objective of a related diversified firm that wants to gain benefits from information asymmetries is to meet multiple needs of buyers so that the buyers are able to reduce their information-acquisition costs by buying multiple products from the firm. Similarly, the objective of a diversified firm that wants to gain benefits from economies of scope is to share one or more resources among products so that the costs of the resources are reduced. Note that to facilitate the analysis, we consider "pure" strategies here (i.e., the pursuit of each benefit independent of the other). We examine the organizational implications of the simultaneous pursuit of both benefits in another section of this article.

We make the following assumptions to evaluate the coordination costs resulting from alternative organization structures: (a) a primary source of benefits (i.e., either information asymmetries or economies of scope) is the focus for the organization structure, (b) all other noncoordination costs remain constant across alternative organization structures, (c) for each source of benefits, each link between organizational units is equally weighted, (d) horizontal coordination is achieved by one level above the organizational units to be coordinated, (e) only the organizational levels and units directly involved in seeking benefits from information asymmetries and economies of scope are considered, and (f) in all cases, firms produce two products.

Further, the following notations are used: CO = Corporate office, BSD = Business division, RD = Resource division, BD = Buyer-interface
relationship among the different products (or product lines) offered by a firm, self-contained divisions that minimize interdivisional coordination costs may be structured around different products (or, equivalently, around different sets of resources or buyers). How should divisions be formed, however, when a firm diversifies to either exploit information asymmetries or economies of scope?

Consider panel B of Figure 1, which depicts a case in which a set of buyers buys both products P1 and P2, thus providing potential information-asymmetry benefits to a firm. In addition, another set of buyers buys product P2 only. In this case, each product could still be organized as a separate division, and buyers who wanted to purchase the two products could deal separately with each division. Both divisions would then coordinate their actions to ensure that potential information-asymmetry benefits are not compromised. Alternatively, the two divisions could be organized so that each division serves all the needs of each set of buyers B1 and B2. One division would offer products P1 and P2 to buyers who wanted to buy both and another division would offer only product P2 to buyers B2. As another alternative, both products P1 and P2 could be organized into one division that contained both resources R1 and R2 and served both sets of buyers B1 and B2.

Similarly, consider panel C of Figure 1, which depicts a case in which two businesses share resources to gain potential economies of scope. In this case, each product could still be organized as a separate division, and the shared resource R1 could be contained within the P1 division. The second division that produces product P2, which also requires resource R1, would then coordinate its needs for R1 with the first division. Alternatively, the shared resource R1 could be organized as a separate division that "sells" its output to two product divisions. As another alternative, both products P1 and P2 could be organized into one division that contained both resources R1 and R2 and served both sets of buyers B1 and B2.

Finally, consider panel D of Figure 1, which depicts more complex relationships among products where one resource, R1, is shared among two products P1 and P2, and one set of buyers buys both products, and another set of buyers buys only product P2. Again, there are several different ways to organize divisions. For instance, each product could be organized as a separate division. Buyers could then deal separately with each division, and the division offering product P2 could coordinate with the division offering product P1 to use resource R1. Alternatively, product divisions could be organized, and resource R1 could be placed in another division. As another alternative, divisions could be organized around buyers, and each division would meet all the needs of its buyers.

It is not always obvious which arrangement of divisions is optimal. Each has advantages and disadvantages. Using transaction costs, Williamson (1975) offered some examples of how divisions may be formed. Similarly, Tang and Pondy (1986) and Jones and Hill (1988)
division, R = Resource unit, and B = Buyer-interface unit such as marketing, customer service, design and engineering, equipment installation, or service delivery departments whose actions could influence buyers' purchase decisions.

Benefits From Information Asymmetries

Consider the pursuit of information-asymmetry benefits. Diversified firms obtain information-asymmetry benefits when they serve multiple needs of their buyers. The underlying mechanisms generating benefits from information asymmetries operate in the minds of buyers (Nayyar, 1990). Buyers economize on information-acquisition costs when evaluating difficult-to-evaluate products by transferring reputation affects among multiple products offered by diversified firms. In this case, divisions can be organized in four different ways, as depicted in Figure 2.

Panel A of Figure 2 depicts an organization structure with two business divisions, BSD1 and BSD2. Each division contains the necessary resources R1 and R2 and buyer-interface units B1 and B2 to independently produce and deliver the two products to a common set of buyers. However, the two divisions would need to design and deliver their products so that benefits from information asymmetries are attained. This would require that each division consider the needs of other products that common buyers purchase, thus requiring interdivisional coordination achieved through the corporate office, CO. This structure, therefore, results in a total of six organizational links needed to achieve the necessary coordination. Panel B of Figure 2 also depicts two business divisions, BSD1 and BSD2. It differs from panel A in that a buyer-interface unit, B1, is now shared between the two divisions in order to better deal with buyers, all of whom purchase both products. This structure also results in a total of six organizational links.

Panel C of Figure 2 depicts an organization structure with two resource divisions, RD1 and RD2, and one buyer-interface division, BD1. In this structure, the corporate office coordinates the activities of the three divisions, resulting in a total of three organizational links. Finally, panel D of Figure 2 depicts an organization structure with a single buyer-interface division, BD1, which controls both resources, R1 and R2, which are needed to produce and deliver the two products buyers purchase from a firm. This results in a total of only two organizational links, which is the lowest number of links possible. Thus, related diversified firms that want to gain potential benefits from information asymmetries should be organized around buyer-interface divisions. When divisions are organized around different sets of buyers, each division would design and deliver all of the products required by its buyers, and thus there would not be any interdivisional coordination. Hence, organizational coordination costs in achieving potential information-asymmetry benefits would be minimized by structuring divisions around groups of relatively independent buyers.
who buy a set of products from a diversified firm. This would result in internally independent divisions.

For example, most large commercial banks organize their banking services into commercial, retail, and private banking divisions on the basis of the set of products each group of buyers purchases. Because this approach may require that some essentially similar services will be produced independently for each set of buyers, it could result in increased costs if each separate division is unable to exhaust any available economies of scale. But if such economies are significant, then either division should be organized to achieve benefits from economies of scope as dis-
cussed in the next section, or this is a case of a firm wanting to gain both benefits simultaneously, which is discussed in a later section of this article.

**Benefits From Economies of Scope**

Consider the pursuit of potential economies of scope. Diversified firms obtain benefits from potential economies of scope from more intensive utilization of shared resources by different businesses. Potential economies from shared resources will be realized when activities involved in the production and delivery of products offered by a firm are coordinated. In this case also, divisions can be organized in four different ways, as depicted in Figure 3.

Panel A of Figure 3 depicts an organization structure with two business divisions, BSD1 and BSD2. Each division contains the necessary resources, R1 and R2, and buyer-interface units, B1 and B2, to independently produce and deliver the two products to two different sets of buyers. However, in this structure, potential economies of scope cannot be realized because each division uses its own resources. This structure, therefore, is clearly not suited for attaining the objectives of a related diversified firm that wants to gain benefits from economies of scope. Panel B of Figure 3 also depicts two business divisions, BSD1 and BSD2. It differs from panel A in that the resource, R1, is now shared between the two divisions in order to obtain economies of scope. This structure results in a total of six organizational links needed to achieve the necessary coordination.

Panel C of Figure 3 depicts an organization structure with two buyer-interface divisions, BD1 and BD2, and one resource division, RD1. In this structure, the corporate office, CO, coordinates the activities of the three divisions, resulting in a total of three organizational links. Finally, panel D of Figure 3 depicts an organization structure with a single resource division, RD1, which controls both buyer-interface units, B1 and B2, that are needed to deal with each independent set of buyers purchasing different products from a diversified firm. This results in a total of only two organizational links, which is the lowest number of links possible. Thus, related diversified firms that want to gain potential benefits from economies of scope should be organized around resource divisions. When divisions are organized around shared resources, each resource division would meet the needs of all related products. The resource division would be responsible for meeting all needs effectively and efficiently. The demands each product places on shared resources may then be appropriately coordinated to maximize economies of scope without congestion (Panzar & Willig, 1981). This would minimize coordination needs. Therefore, organizational-coordination costs in achieving potential economies of scope would be minimized by structuring divisions around shared resources.

For example, United Airlines has a separate aircraft-maintenance division, which maintains both its own aircraft and the aircraft of other
airlines. Similarly, Lufthansa, another airline, has a separate flight-crew training division, which trains both Lufthansa's flight crews and the crews of other airlines. Marriott Hotels has a separate food-service division that manages both airline and airport food services. Kraft General Foods, a wholly owned subsidiary of Philip Morris, also has a separate food-service division that coordinates sales and service to the food-service industry for all products formerly handled independently by Kraft and General Foods prior to their respective acquisitions by Philip Morris.

Thus, minimization of coordination costs in the pursuit of potential information-asymmetry benefits and economies of scope in related diver-
sified firms is likely to be accompanied by the multidivisional organizational form. In each case, however, divisions should be formed on the basis of the particular source of benefits being pursued by a firm.

Proposition 1a: Attaining potential benefits from information asymmetry in related diversified firms will be facilitated when divisions are organized around unique, independent sets of buyers.

Proposition 1b: Attaining potential benefits from economies of scope in related diversified firms will be facilitated when divisions are organized around unique, shared resources.

Processes

Galbraith and Kazanjian described processes as "the direction and frequency of work and information flows linking the differentiated roles within and between departments" (1986: 6). In the context examined in this article, we propose that organizational processes will differ according to whether they are designed for attaining potential benefits of information asymmetry or economies of scope in related diversified firms. Thus, organizational processes must help integrate organizational departments within divisions as required to effectively deliver multiple products or services.

According to a framework developed by Daft and Lengel (1986), organizations process information in order to reduce uncertainty and equivocality. Uncertainty means the absence of information (Garner, 1972; Miller & Frick, 1949; Shannon & Weaver, 1949). It is the difference between the information needed to perform a task and the information currently available to an organization (Galbraith, 1973).

Daft and Lengel (1986) illustrated uncertainty through an example of a simple laboratory experiment, in which the subjects play a game of 20 questions. In the game, subjects receive yes-no answers to questions about the identity of an unknown object. Each answer provides increased information on the identity of the object. Once the object is identified correctly, uncertainty is gone, and no additional information is needed. So, within this view, uncertainty leads to the acquisition and analysis of objective information to answer specific questions.

Equivocality means ambiguity due to multiple, and many times conflicting, interpretations of the same information (Daft & Macintosh, 1981; Daft & Weick, 1984; Weick, 1973). High amounts of equivocality will result in confusion, disagreement, and a lack of understanding (Daft, Lengel, & Trevino, 1987). As Daft and Lengel noted, "equivocality means that asking a yes-no question is not feasible. Participants are not certain about what questions to ask, and if questions are posed, the situation is ill defined to the point where a clear answer will not be forthcoming" (1986: 555).
Equivocality therefore requires managers to engage in an exchange of assumptions, problem definitions, and opinions toward the development of a shared interpretation and understanding of conditions against which future decisions and actions will be based (Griesinger, 1990). Note that no amount of additional data collection and straightforward analysis can help to resolve conditions of equivocality. Thus, dealing with uncertainty requires gathering missing data, whereas dealing with equivocality requires making sense of available data.

Similar to the initial development of these constructs, uncertainty and equivocality were considered to be conceptually independent by Daft and Lengel (1986). They noted, however, that uncertainty and equivocality "are undoubtedly related in the real world. High levels of equivocality may require some new data as well as clarification and agreement. Circumstances that demand new data may also generate some need for additional interpretation and definition" (Daft & Lengel, 1986: 558). Nevertheless, the possible correlation of two constructs does not limit their ability to be understood as theoretically distinct. Further, these constructs have been measured in several empirical studies, each with different operationalizations (Daft, Lengel, & Trevino, 1987; Daft & Macintosh, 1981; Daft, Sormunen, & Parks, 1988; Mills & Turk, 1986; Trevino, Lengel, & Daft, 1987).

The uncertainty-reduction role of various organizational mechanisms is well documented (Galbraith, 1973). To reduce equivocality, structural mechanisms must help in data clarification, debate, and enactment rather than just providing large amounts of data. Because managers work under conditions of bounded rationality and face time constraints (March & Simon, 1958), the key factor in equivocality reduction is the extent to which organization design facilitates the processing of "rich" information. Information richness is defined as the ability of information to change understanding within a time interval (Daft & Lengel, 1986). Communications media vary in their capacity to process rich information. In order of decreasing richness, media classifications are (a) face-to-face, (b) telephone, (c) personal documents such as letters or memos, (d) impersonal written memos, and (e) numeric documents (Daft & Lengel, 1985). Organizational mechanisms can be arrayed on a continuum with respect to their capacity for reducing uncertainty or resolving equivocality for decision makers (Galbraith, 1973, 1977; Daft & Lengel, 1986), as given in Figure 4. Note that several mechanisms within the midrange of options, such as planning or special reports, can be used to reduce either uncertainty or equivocality, depending upon their particular focus.

It is tempting to simply adopt all processes listed in Figure 4 so that related diversified firms are well prepared to handle all situations encountered during attempts to attain benefits from information asymmetry and economies of scope. Galbraith (1973) noted, however, that there are increasing costs associated with these mechanisms as one moves from left to right in Figure 4. Further, it is likely that an excess of processes
FIGURE 4
The Role of Organizational Processes in Reducing Equivocality and Uncertainty

<table>
<thead>
<tr>
<th>Process facilitates less rich, impersonal media</th>
<th>Process facilitates rich, personal media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rules and Regulations</td>
<td>Formulations and Information Systems</td>
</tr>
<tr>
<td>Special Planning</td>
<td>Planning</td>
</tr>
<tr>
<td>Direct Contact</td>
<td>Integrator</td>
</tr>
<tr>
<td>Group Meeting</td>
<td>Equivocality Reduction</td>
</tr>
</tbody>
</table>

(Equivocality Reduction
(Clarify, reach agreement, decide which questions to ask)

Uncertainty Reduction
(Obtain additional data, seek answers to explicit questions)


Instituted to achieve coordination among businesses will result in slower decision making. This may be detrimental in high-velocity environments (Bourgeois & Eisenhardt, 1988; Eisenhardt, 1989). Stalk (1988) has also suggested that time is often a strategic weapon. Under this perspective, firms that act fast to capitalize on opportunities or to deal with threats are likely to obtain superior performance. Multiple decision-making processes may inhibit firms from acting fast. Hence, it appears desirable to adopt only those processes that are essential to achieving organizational coordination that is sufficient to meet a firm's objectives.

Daft and Lengel (1986) identified three sources of uncertainty and equivocality: technology, environment, and interdepartmental relations. Technology refers to the degree of task variety and task analyzability (Fearow, 1987). Environment refers to the interpretation of the external environment. Interdepartmental relations refer to the lateral information processing and integration across departments (Galbraith, 1973).

Here we extend the analysis of interdepartmental relations as a source of organizational uncertainty and equivocality to the specific context of related diversified firms. We argue that organizational processes depend upon the nature of interdepartmental relations, which, in turn, depend upon the particular source of benefits being pursued (information asymmetry or economies of scope) and the associated organization struc-
tures that are adopted. More specifically, we will focus on interdepartmental relations within divisions, which will be configured differently, depending upon the type of related diversification benefits being pursued.

Although technology and environment do affect the levels of uncertainty and equivocality, we do not see them as determined by the particular source of benefits being pursued, but rather differing by distinct businesses and their associated contexts. Therefore, technology and environment are not included in the discussion that follows and are assumed to be held constant.

Sources of Diversification Benefits and Interdepartmental Relations

In this section, we will discuss the relation of interdepartmental relations to the sources of diversification benefits. For theory-building purposes, when discussing the pursuit of information asymmetries or economies of scope, we assume that the firm represents a "pure type," seeking potential benefits of one type or the other. Clearly, some firms may pursue both potential benefits simultaneously. We address this latter, more complex pursuit in the discussion section.

Daft and Lengel (1986) argued that two characteristics of interdepartmental relations influence uncertainty and equivocality. The first is the strength of interdependence between departments, which they argued influences uncertainty. Thompson (1967) defined interdependence as the extent to which departments depend upon each other to accomplish their tasks. We have argued earlier that pursuit of information-asymmetry benefits in diversified firms is expected to lead to a multidivisional structure with independent divisions built around unique sets of buyers. In such a structure, as depicted in panel D of Figure 2, departments are sets of resources directed at a unique set of buyers. In practice, these resources are typically functionally specialized units. An example of such a structure would be a commercial bank organized around distinct sets of buyers. Such a structure would entail a separate division for commercial, retail, and private (wealthy) buyers. Each division would be composed of its own marketing, facilities, personnel, and operations units. Another example is U.S. West Inc., a telecommunications firm, which reorganized into groups reflecting different sets of buyers such as families with and without children, Hispanic consumers, and younger consumers (Bennett, 1990). McGraw-Hill, a publishing firm, has also adopted a "market focus" by organizing its business along the lines of the industries it serves rather than by media (Wall Street Journal, 1992). British Telecom (a very large telecommunications firm) has also reorganized its structure around its buyers rather than around products or geography (Mackay, 1990).

Under such an arrangement, departmental interdependence will be high, because each buyer division is composed of resources and functions that are all necessary and required components. These interdependent
subunits therefore must be coordinated in the delivery of products and services to buyers.

In contrast, the pursuit of potential economies of scope in diversified firms is expected to lead to a multidivisional structure with relatively independent divisions built around shared resources. An example of such a structure would be an airline using its maintenance resources and facilities to also conduct contract maintenance for other airlines. This would result in a division, as suggested by panel D of Figure 3, which is largely organized around the shared resource, with separate buyer-interface units designated for sales and marketing to various potential buyers, internally and externally. In this particular case, the number of sales and marketing units may be only a few if the buyers (i.e., other airlines) made the decision to purchase such services centrally. Alternatively, if the buyers decentralized that decision to various geographic operating divisions, the number of subunits would be considerably larger. Another example is Kraft General Foods, which uses its manufacturing capabilities to produce goods for multiple buyer-interface units, including the food-service division and several product-marketing divisions.

Under these arrangements, departmental interdependence would be low, because these selling units are typically focused on distinct buyer groups. The scheduling and allocation of the critical shared resource is done by the division general management and not directly between the buyer-interface units themselves. This makes the buyer-interface units relatively independent of each other, which reduces uncertainty (Hill & Hoskisson, 1987).

Daft and Lengel’s (1986) second characteristic of interdepartmental relations is the extent of differentiation between departments, which they argued influences equivocality. Differentiation refers to the differences between departments, which arise from such factors as functional specialization, time horizon, goals, frame of reference, and jargon (Lawrence & Lorsch, 1967). Correspondingly, the greater the differentiation, the greater the equivocality.

We propose that divisions organized around common buyers in the pursuit of information asymmetry will demonstrate greater differentiation than will divisions organized around shared resources in the pursuit of economies of scope. As mentioned previously, when pursuing benefits from information asymmetries, divisions are organized around common sets of buyers and are typically composed of functional departments such as marketing, production, or engineering. Functional departments such as these typically are composed of individuals with specialized experiences, training, and associated cognitive frameworks. Given specialized tasks, they are assigned goals that are consistent with their particular mission within a firm and which are different from those of other functions. Such fundamental differences across functionally specialized departments result in high differentiation.
Conversely, in pursuing economies of scope, divisions are organized around shared resources. In this case, departments within the division are usually buyer-interface units such as selling or marketing departments. These units, which have the same functional specialization, each with a different buyer focus, are relatively similar in functional orientation, frame of reference, time horizon, and goals, therefore suggesting low differentiation.

A summary of the organizational effects of interdepartmental relations by source of benefits is presented in Table 1.

High departmental interdependence within divisions increases uncertainty associated with tasks in pursuit of potential related diversification benefits. High departmental differentiation within divisions increases equivocality associated with tasks in pursuit of potential related diversification benefits. Uncertainty can be reduced by processing greater amounts of information across departments. Equivocality can be reduced by using rich media in communicating with other departments.

Therefore, high interdependence accompanied by high differentiation in the pursuit of information-asymmetry benefits requires relatively large amounts of information exchange across departments and relatively rich media to resolve differences among departments. In contrast, low interdependence together with low differentiation occurring in the pursuit of economies of scope requires a relatively small amount of in-

<table>
<thead>
<tr>
<th>Organizational Processes by Source of Benefits</th>
<th>Economies of Scope</th>
<th>Information Asymmetries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational Consequences</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Departmental relations</td>
<td>Low interdependence</td>
<td>High interdependence</td>
</tr>
<tr>
<td></td>
<td>Low differentiation</td>
<td>High differentiation</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Equivocality</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Media and information needs</td>
<td>Small amount of</td>
<td>Large amount of</td>
</tr>
<tr>
<td></td>
<td>information to handle high interdependence</td>
<td>information to handle high interdependence</td>
</tr>
<tr>
<td></td>
<td>Relatively less rich media</td>
<td>Relatively richer media to resolve differences</td>
</tr>
<tr>
<td>Examples of organizational processes</td>
<td>Rules and regulations, formal information systems, special reports, planning, impersonal written memos, numeric documents</td>
<td>Full-time integrators, task forces, teams, special studies &amp; projects, planning confrontation, occasional face-to-face or telephone meetings, personal memos</td>
</tr>
</tbody>
</table>
formation exchange across departments to deal with interdependence and relatively less rich media to resolve differences among departments.

The information and media needs required to attain the benefits from each source are summarized in Table 1. Examples of specific organizational processes required to deal with them are also given in Table 1.

Proposition 2a: Attaining potential benefits from information asymmetry in related diversified firms will be facilitated when organizational processes adopted within divisions emphasize relatively rich media and relatively large amounts of interdepartmental information exchange.

Proposition 2b: Attaining potential benefits from economies of scope in related diversified firms will be facilitated when organizational processes adopted within divisions emphasize relatively less rich media and relatively small amounts of interdepartmental information exchange.

DISCUSSION

This article extends the contingency theory linking diversification strategy to organization design by proposing that the particular source of benefits being pursued by related diversified firms causes variations in the multidivisional form of organization. Propositions derived from a consideration of the structure and processes required to successfully realize potential benefits are presented. These should aid future conceptual and empirical research into the implementation of diversification strategies based on these two sources of benefits.

Consistent with Govindarajan (1988), Hoskisson (1987), and Kazanjian and Drazin (1987), this article emphasizes the importance of strategy as a critical contingency for organization design. It calls for recognizing variations among related diversification strategies to suggest that the treatment of such strategies as a monolithic category for research purposes is inappropriate. Within-category differences appear to cause significant variations. It is possible that Hoskisson's (1987) finding of no differences in the rate of return of related diversified firms when they adopted the M-form structure may simply be a reflection of such within-category differences overwhelming between-category differences. A separation of firms into groups based on the underlying mechanisms from which their related diversification strategies derive benefits may have yielded important insights.

Similarly, treatment of the multidivisional form as a monolithic category masks important differences within such organization designs that are crucial to successful realization of potential relatedness benefits. It is, perhaps, this tendency in previous research that has contributed to the lack of understanding about why diversification strategies often result in
no gains for firms (Porter, 1987) and the growing confusion about diversification strategies in the management literature (Ramanujam & Varadarajan, 1989; Reed & Luffman, 1986).

Further research is also required into variations in organization designs due to the characteristics of particular resources such as physical assets and human resources shared among businesses. In this article we have treated all resources as belonging to a single category, but firms may differ in terms of either the particular resources they share among their businesses or the benefits they seek from such sharing (Williamson, 1975, 1985). Sharing plant and equipment, distribution channels, or other physical assets, for example, requires that the needs of different products be considered during the design phase of such physical assets. Further, once designed and constructed to encourage sharing among different products, it is virtually impossible to separate physical assets associated with each of the two or more products involved. Thus, some flexibility is inherently compromised when physical resources are shared. Also, such sharing reduces resources that are available to any one business. In contrast, sharing human expertise or knowledge among different products is relatively less permanent and can be altered when needed. Also, human resources may acquire attributes through learning, which permit greater shared utilization over time. For example, ability to manage a particular type of business, such as consumer businesses, may grow over time as an organization's members gain experience, permitting them to then manage multiple businesses with similar managerial requirements (Grant, 1988; Prahalad & Bettis, 1986). Further, utilizing managerial knowledge in one business does not diminish its availability for other businesses. Shared technologies among businesses exhibit similar characteristics. Thus, it would appear that the organizational demands of sharing physical assets could differ from those of sharing human resources or technologies across businesses. This suggests that it would be instructive to explore the organizational implications of sharing different types of resources.

We have argued that organizational arrangements in related diversified firms need to be differentiated with respect to the source of benefits being pursued. This raises a complex issue. When diversified firms pursue both sources of benefits simultaneously, organizational differences can be a source of conflict. These conflicts could effectively negate the potential benefits of the strategy (Guth & MacMillan, 1986). We have deferred until now any discussion of appropriate organization designs for the simultaneous pursuit of both sources of benefits. Essentially, when related diversified firms seek to obtain benefits from both economies of scope and information asymmetry, organizational tasks become very complex. Thus, firms must adopt complex organization structures and processes facilitating emphasis in more than one direction. This results in a multifocal organization (Prahalad & Doz, 1987).
A matrix structure is a prototypical multilocal organization, which is particularly well suited to balance the conflicting demands of economies of scope and information-asymmetry benefits. One dimension of the matrix would focus on obtaining economies of scope, whereas the other dimension would focus on obtaining information-asymmetry benefits. Thus, along the first dimension would be arrayed managers responsible for managing shared resources; along the second dimension would be arrayed managers responsible for managing relationships with common buyers. At the intersection of the two dimensions would be business managers with overall profit responsibility for each business. They would ensure coordination between the two dimensions of the matrix structure.

In addition to a matrix structure, appropriate organizational processes would also be needed to manage the matrix. Effective coordination within the matrix would require constant contact among the business managers, resource managers, and buyer-interface managers. Thus, we would expect extensive use of rich media to resolve equivocality across the three groups arising from the high degree of differentiation among them and the collection and exchange of large amounts of information to resolve uncertainties arising from the high degree of interdependence among the three groups.

It should be noted that a matrix structure and its associated organizational processes are generally not easy to implement. This is because organizational roles become very complex and a change to a matrix structure creates organizational confusion and stress. For these reasons, the matrix structure has often been shunned. However, as Galbraith and Kazanjian (1988) noted, managements have sometimes failed to properly implement matrix structures. Such failures occurred either because a matrix structure was inappropriate or imposed suddenly, or because insufficient time was given to working out all the bugs. Galbraith and Kazanjian (1988) and Bartlett and Ghoshal (1990) pointed to several firms that have successfully implemented a matrix structure in the pursuit of multiple sources of advantage: Intel, Motorola, Procter and Gamble, Unilever, and Boeing, to name a few. In each of these cases, however, managements gave attention to installing appropriate organizational processes to ensure cooperation as well as coordination. The challenge for diversified firms that are pursuing benefits from both information asymmetries and economies of scope is to not only design an appropriate matrix structure but also to implement the matrix while avoiding the problems well documented in the management literature. Clearly, any firm that has a capability to simultaneously benefit from both information-asymmetry benefits and economies of scope would gain a considerable, sustainable competitive advantage over its rivals. Further research is needed to determine how to develop such organizational capabilities.
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